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Smithsonian Institution

Report of the Secretary and Financial Report of the Executive Committee of the Board of Regents

1960

Smithsonian Institution

Report of the Secretary and Financial Report
of the Executive Committee of
the Board of Regents

For the year ended June 30

1960

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THE SMITHSONIAN INSTITUTION

June 30, 1960

Presiding Officer ex officio.—DWIGHT D. EISENHOWER, President of the United States.

Chancellor.—EARL WARREN, Chief Justice of the United States.

Members of the Institution:

- DWIGHT D. EISENHOWER, President of the United States.
- RICHARD M. NIXON, Vice President of the United States.
- EARL WARREN, Chief Justice of the United States.
- CHRISTIAN A. HERTER, Secretary of State.
- ROBERT B. ANDERSON, Secretary of the Treasury.
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- ARTHUR E. SUMMERFIELD, Postmaster General.
- FRED A. SEATON, Secretary of the Interior.
- EZRA TAFT BENSON, Secretary of Agriculture.
- FREDERICK H. MUELLER, Secretary of Commerce.
- JAMES P. MITCHELL, Secretary of Labor.
- ARTHUR S. FLEMMING, Secretary of Health, Education, and Welfare.

Regents of the Institution:

- EARL WARREN, Chief Justice of the United States, Chancellor.
- RICHARD M. NIXON, Vice President of the United States.
- CLINTON P. ANDERSON, Member of the Senate.
- J. WILLIAM FULBRIGHT, Member of the Senate.
- LEVERETT SALTONSTALL, Member of the Senate.
- FRANK T. BOW, Member of the House of Representatives.
- OVERTON BROOKS, Member of the House of Representatives.
- CLARENCE CANNON, Member of the House of Representatives.
- JOHN NICHOLAS BROWN, citizen of Rhode Island.
- ARTHUR H. COMPTON, citizen of Missouri.
- ROBERT V. FLEMING, citizen of Washington, D.C.
- CRAWFORD H. GREENEWALT, citizen of Delaware.
- CARYL P. HASKINS, citizen of Washington, D.C.
- JEROME C. HUNSAKER, citizen of Massachusetts.

Executive Committee.—ROBERT V. FLEMING, *chairman*, CLARENCE CANNON, CARYL P. HASKINS.

Secretary.—LEONARD CARMICHAEL.

Assistant Secretaries.—J. L. KEDDY, A. REMINGTON KELLOGG.

Assistant to the Secretary.—JAMES C. BRADLEY.

Administrative assistant to the Secretary.—MRS. LOUISE M. PEARSON.

Treasurer.—EDGAR L. ROY.

Chief, editorial and publications division.—PAUL H. OEHSER.

Librarian.—RUTH E. BLANCHARD.

Curator, Smithsonian Museum Service.—G. CARROLL LINDSAY.

Buildings Manager.—ANDREW F. MICHAELS, JR.

Director of Personnel.—L. C. WESTFALL.

Chief, supply division.—A. W. WILDING.

Chief, photographic service division.—O. H. GREESON.

UNITED STATES NATIONAL MUSEUM

Director.—A. Remington Kellogg.
Registrar.—Helena M. Weiss.

MUSEUM OF NATURAL HISTORY

Director.—A. C. Smith.

DEPARTMENT OF ANTHROPOLOGY: F. M. Setzler, head curator; A. J. Andrews, exhibits specialist.

Division of Archeology: W. R. Wedel, curator; Clifford Evans, Jr., G. W. Van Beek, associate curators.

Division of Ethnology: S. H. Riesenberg, curator; G. D. Gibson, E. I. Knez, associate curators; R. A. Elder, Jr., assistant curator.

Division of Physical Anthropology: T. D. Stewart, curator; M. T. Newman, associate curator.

DEPARTMENT OF ZOOLOGY: Herbert Friedmann, head curator.

Division of Mammals: D. H. Johnson, curator; C. O. Handley, Jr., H. W. Setzer, associate curators.

Division of Birds: Herbert Friedmann, acting curator; H. G. Deignan, associate curator.

Division of Reptiles and Amphibians: Doris M. Cochran, curator.

Division of Fishes: L. P. Schultz, curator; E. A. Lachner, W. R. Taylor, associate curators.

Division of Insects: J. F. G. Clarke, curator; O. L. Cartwright, R. E. Crabill, Jr., W. D. Field, associate curators; Sophy Parfin, assistant curator.

Division of Marine Invertebrates: F. A. Chace, Jr., curator; F. M. Bayer, T. E. Bowman, C. E. Cutress, Jr., associate curators.

Division of Mollusks: H. A. Rehder, curator; J. P. E. Morrison, associate curator.

DEPARTMENT OF BOTANY (NATIONAL HERBARIUM): J. R. Swallen, head curator.

Division of Phanerogams: L. B. Smith, curator; R. S. Cowan, E. C. Leonard, Velva E. Rudd, J. J. Wurdack, associate curators.

Division of Ferns: C. V. Morton, curator.

Division of Grasses: J. R. Swallen, acting curator.

Division of Cryptogams: M. E. Hale, Jr., acting curator; P. S. Conger, associate curator; R. R. Ireland, Jr., assistant curator.

Division of Woods: W. L. Stern, curator.

DEPARTMENT OF GEOLOGY: G. A. Cooper, head curator.

Division of Mineralogy and Petrology: G. S. Switzer, curator; R. S. Clarke, Jr., P. E. Desautels, E. P. Henderson, associate curators.

Division of Invertebrate Paleontology and Paleobotany: G. A. Cooper, acting curator; R. S. Boardman, P. M. Kier, Richard Cifelli, associate curators; E. G. Kauffman, assistant curator.

Division of Vertebrate Paleontology: C. L. Gazin, curator; D. H. Dunkle, Nicholas Hotton, III, associate curators; F. L. Pearce, exhibits specialist.

MUSEUM OF HISTORY AND TECHNOLOGY

Director.—F. A. Taylor.
Assistant Director.—J. C. Ewers.
Chief exhibits specialist.—J. E. Anglim.
Chief zoological exhibits specialist.—(Vacant.)
Assistant chief exhibits specialists.—B. S. Bory, R. O. Hower, B. W. Lawless, Jr.

DEPARTMENT OF SCIENCE AND TECHNOLOGY: R. P. Multhauf, head curator.

Division of Physical Sciences: R. P. Multhauf, acting curator.

Division of Mechanical and Civil Engineering: E. S. Ferguson. curator; E. A. Battison, associate curator; R. M. Vogel, assistant curator.

Division of Transportation: H. I. Chapelle, curator; K. M. Perry, associate curator; J. H. White, Jr., assistant curator.

Division of Electricity: W. J. King, Jr., acting curator.

Division of Medical Sciences: J. B. Blake, curator, S. K. Hamarneh, associate curator.

DEPARTMENT OF ARTS AND MANUFACTURES: P. W. Bishop, head curator.

Division of Textiles: Grace L. Rogers, acting curator.

Division of Ceramics and Glass: P. V. Gardner, acting curator.

Division of Graphic Acts: Jacob Kainen, curator; F. O. Griffith, 3d, assistant curator.

Division of Industrial Cooperation: P. W. Bishop, acting curator; Charles O. Houston, Jr., associate curator.

Division of Agriculture and Forest Products: E. C. Kendall, acting curator.

DEPARTMENT OF CIVIL HISTORY: A. N. B. Garvan, head curator; P. C. Welsh, associate curator.

Division of Political History: W. E. Washburn, curator, Mrs. Margaret B. Klapthor, associate curator; C. G. Dorman, Mrs. Anne W. Murray, assistant curators.

Division of Cultural History: C. M. Watkins, acting curator; J. D. Shortridge, Rodris C. Roth, associate curators; John N. Pearce, assistant curator.

Division of Philately and Postal History: G. T. Turner, acting curator; F. J. McCall, associate curator; C. H. Scheele, assistant curator.

Division of Numismatics: Vladimir Clain-Stefanelli, acting curator; Mrs. Elvira Clain-Stefanelli, assistant curator.

DEPARTMENT OF ARMED FORCES HISTORY: M. L. Peterson, head curator.

Division of Military History: E. M. Howell, acting curator; C. R. Goins, Jr., assistant curator.

Division of Naval History: M. L. Peterson, acting curator; P. K. Lundeberg, associate curator.

BUREAU OF AMERICAN ETHNOLOGY

Director.—F. H. H. Roberts, Jr.

Anthropologist.—H. B. Collins, Jr.

Ethnologists.—W. C. Sturtevant, W. L. Chafe.

RIVER BASIN SURVEYS.—F. H. H. Roberts, Jr., *Director;* R. L. Stephenson, *Chief, Missouri Basin Project.*

ASTROPHYSICAL OBSERVATORY

Director.—F. L. Whipple.

Associate Directors.—J. A. Hynek.

Astrophysicists.—R. J. Davis, E. L. Fireman, L. G. Jacchia, Max Krook, F. B. Riggs, Jr., C. A. Whitney.

Mathematician.—R. E. Briggs.

TABLE MOUNTAIN, CALIF., FIELD STATION.—A. G. Froiland, *physicist.*

DIVISION OF RADIATION AND ORGANISMS:

Chief.—W. H. Klein.

Plant physiologists.—V. B. Elstad, Leonard Price, E. C. Sisler.

Electronic engineer.—J. H. Harrison.

Instrument maker.—D. G. Talbert.

NATIONAL COLLECTION OF FINE ARTS

Director.—T. M. Beggs.
Associate curator.—Rowland Lyon.
SMITHSONIAN TRAVELING EXHIBITION SERVICE.—Mrs. Annemarie H. Pope, *Chief.*

FREER GALLERY OF ART

Director.—A. G. Wenley.
Assistant Director.—J. A. Pope.
Associate in Near Eastern art.—Richard Ettinghausen.
Curator, Laboratory.—R. J. Gettens.
Associate curators.— J. F. Cahill, H. P. Stern.

NATIONAL AIR MUSEUM

Advisory Board:
 Leonard Carmichael, *Chairman.*
 Maj. Gen. Brooke C. Allen, U.S. Air Force.
 Rear Adm. P. D. Stroop, U.S. Navy.
 Lt. Gen. James H. Doolittle.
 Grover Loening.
Director.—P. S. Hopkins.
Head curator and historian.—P. E. Garber.
Associate curators.—L. S. Casey, W. M. Male, K. E. Newland.
Junior curator.—R. B. Meyer.

NATIONAL ZOOLOGICAL PARK

Director.—T. H. Reed.
Associate Director.—J. L. Grimmer.
Veterinarian.—James F. Wright.

CANAL ZONE BIOLOGICAL AREA

Resident Naturalist.—M. H. Moynihan.

INTERNATIONAL EXCHANGE SERVICE

Chief.—J. A. Collins.

NATIONAL GALLERY OF ART

Trustees:
 EARL WARREN, Chief Justice of the United States, *Chairman.*
 CHRISTIAN A. HERTER, Secretary of State.
 ROBERT B. ANDERSON, Secretary of the Treasury.
 LEONARD CARMICHAEL, Secretary of the Smithsonian Institution.
 F. LAMMOT BELIN.
 DUNCAN PHILLIPS.
 CHESTER DALE.
 PAUL MELLON.
 RUSH H. KRESS.
President.—CHESTER DALE.
Vice President.—F. LAMONT BELIN.
Secretary-Treasurer.—HUNTINGTON CAIRNS.
Director.—JOHN WALKER.
Administrator.—ERNEST R. FEIDLER.
General Counsel.—HUNTINGTON CAIRNS.
Chief Curator.—PERRY B. COTT.

Honorary Research Associates, Collaborators, and Fellows

OFFICE OF THE SECRETARY

John E. Graf

UNITED STATES NATIONAL MUSEUM

MUSEUM OF NATURAL HISTORY

Anthropology

Mrs. Arthur M. Greenwood.
N. M. Judd, Archeology.
H. W. Krieger, Ethnology.
Betty J. Meggers, Archeology.
H. Morgan Smith, Archeology.
W. W. Taylor, Jr., Archeology.
W. J. Tobin, Physical Anthropology.

Zoology

J. Bruce Bredin.
M. A. Carriker, Insects.
C. J. Drake, Insects.
Isaac Ginsberg, Fishes.
D. C. Graham, Biology.
Horton H. Hobbs, Jr., Marine Invertebrates.
A. B. Howell, Mammals.
Laurence Irving, Birds.
W. L. Jellison, Insects.
W. M. Mann, Hymenoptera.
Allen McIntosh, Mollusks.
J. P. Moore, Marine Invertebrates.
C. F. W. Muesebeck, Insects.
W. L. Schmitt.
Benjamin Schwartz, Helminthology.
R. E. Snodgrass, Insects.
T. E. Snyder, Insects.
Alexander Wetmore, Birds.
Mrs. Mildred S. Wilson, Copepod Crustacea.

Botany

Mrs. Agnes Chase, Grasses.
E. P. Killip, Phanerogams.
F. A. McClure, Grasses.
J. A. Stevenson, Fungi.

Geology

R. S. Bassler, Paleontology.
C. Wythe Cooke, Invertebrate Paleontology.
W. T. Schaller, Mineralogy.

MUSEUM OF HISTORY AND TECHNOLOGY

Exhibits

William L. Brown.

History

Elmer C. Herber.
Ivor M. Hume.
F. W. MacKay, Numismatics.

Science and Technology

Derek J. Price.

BUREAU OF AMERICAN ETHNOLOGY

J. P. Harrington.
Sister M. Inez Hilger.
M. W. Stirling.
A. J. Waring, Jr.

Astrophysical Observatory

C. G. Abbot.

Freer Gallery of Art

Oleg Grabar.
Grace Dunham Guest.
Max Loehr.
Katherine N. Rhoades.

National Air Museum

Frederick C. Crawford.
John J. Ide.

National Zoological Park

W. M. Mann.
E. P. Walker.

Canal Zone Biological Area

C. C. Soper.

Report of the Secretary of the Smithsonian Institution

LEONARD CARMICHAEL

For the Year Ended June 30, 1960

To the Board of Regents of the Smithsonian Institution:

Gentlemen: I have the honor to submit a report showing the activities and condition of the Smithsonian Institution and its branches for the fiscal year ended June 30, 1960.

GENERAL STATEMENT

It is perennially amazing, in rereading the history of the Smithsonian Institution, to realize the wisdom that guided the founder, James Smithson, and the prime organizer and first Secretary, Joseph Henry. Smithson directed, in his now famous phrase, that his institution concern itself with "the increase and diffusion of knowledge among men." This was indeed a broad and humane prescription. Equally so was Joseph Henry's interpretation of it when he came to lay down the fundamental plan of the Institution. Said Henry: "Smithson's will makes no restriction in favor of any particular kind of knowledge, and hence all branches are entitled to a share of attention. He was well aware that knowledge should not be viewed as existing in isolated parts, but as a whole, each portion of which throws light on all the others, and that the tendency of all is to improve the human mind, and to give it new sources of power and enjoyment." He further added, "To effect the greatest good, the organization of the Institution should be such as to produce results which could not be attained by other means."

The social import of the Smithsonian's broad and inspiring charter has never been more obvious than it is in today's atomic age when the great modern achievements in science and technology, which daily impress themselves upon every citizen, call for the widest and most liberal basis of understanding. But this is still an age in which enlightenment is far from universal. A great responsibility, therefore, rests upon those individuals and institutions into whose hands has been placed the preservation of our cultural and scientific heritage to provide, in every effectual way, those new sources of intellectual power that Joseph Henry visualized so that every citizen will aspire to an understanding of this complex modern world and feel himself a part of man's upward struggle.

We have an obligation to the future. In shaping our museum halls, we must render human history—of our environment, our ideas, or technical achievements, our institutions, our manners and customs, our daily lives—meaningful to the citizens of tomorrow as well as of today. It is, also, our responsibility to raise the general level of cultural appreciation, to educate in the broadest sense, and to encourage people to seek knowledge of the highest order. The Smithsonian Institution has an important role to fulfill in meeting these responsibilities. Through its great museums, art galleries, research laboratories, and explorations, it seeks not only to preserve and document the full range of our history but also to interpret it to the public.

Scientific and other scholarly research, educational exhibits, publication of new advances in knowledge, facilitation of worldwide interchange of published scientific and literary information, and, within the Institution's resources, the fostering and stimulation of scholarly endeavor—all are part of the work of today's Smithsonian, just as they have been during all the 114 years since its establishment. A great museum must be more than a laboratory or a showcase. It must be a center of interpretation and inspiration for its millions of visitors.

In these first paragraphs of this year's Smithsonian Report, it seems especially appropriate, therefore, to give particular attention to the growing significance of the Institution's museum exhibits. We are in the midst of extensive building and modernization programs which have already had their impact upon the visiting public; and it may be salutary to analyze some of the factors involved.

Both in April and again in May of this year more than a million people, by actual count, came to the old buildings of the Smithsonian. This does not include those who, during this time, visited the National Gallery of Art and the National Zoological Park. Never before in a single month have so many visitors come to the Smithsonian, or probably to any other museum complex in the world. In fact, as recently as 1953 the largest total monthly attendance was almost exactly one-half the figure for this year's banner months.

What has caused this explosive increase? There seems to be no doubt that this amazing growth in public interest in the Smithsonian is due to the many new, vital, and effective renovated museum halls which have been opened to the public during the past few years. These new halls include the First Ladies Hall, the American Indian Hall, the North American Mammals Hall, the Latin American Archeology Hall, the Bird Hall, the American Cultural History Hall, the Power Machinery Hall, the Second American Indian Hall, the Hall of Health, the Military History Hall, the Printing Arts Hall, the Gems and Minerals Halls, the Textile Hall, the Jade Room, the World of Mammals Hall, and the Agricultural Hall. Each of these revitalized exhibit areas is really a museum in itself. Each one alone has great visitor-attraction potential purely from an educational standpoint. Furthermore, in each of the modernized halls, the Smithsonian has been guided by new general museum principles and has used a variety of means to achieve the objectives mentioned above which the curators and designers had in mind in planning and constructing the halls.

The basic new philosophy of the nature of the museum that is illustrated in each rejuvenated hall is that exhibits should be so presented that the serious visitor may be both interested and instructed. In each new hall a visitor may, of course, be casually entertained, but he also is exposed to accurate, well-organized, attractively arranged segments of vital human knowledge. Thus, if he spends a moderate amount of time and effort in studying the sequences of objects and carefully reads the labels, he will be amply rewarded by a deeper and wider understanding of the complex world in which he lives. Aided by the modern exhibit techniques now available, the story of man and his world unfolds before the visitor as he walks from hall to hall. These new exhibits are in marked contrast to the static displays of yesterday. In the old days the viewer may have been impressed by the abundance of material exhibited but, for the most part, was neither instructed nor motivated to future study.

The Gems and Minerals Hall may be taken as an example of the effect of this new philosophy in dealing with a specific subject-matter field. The mineral collections of the Smithsonian, said to be the best of their kind in the world, have been built up during more than a century by gifts from interested friends all over the globe and by transfer to the Institution of outstanding specimens from the United States Geological Survey and other Federal bureaus. These collections are so extensive and important that many geological scientists come from every part of the country each year to work in our laboratories on special problems that can be solved only by the study of this material.

The public exhibits in the new Gems and Minerals Hall, however, represent only selected specimens from the total mineral collections of the Smithsonian. The problem, therefore, was first to select for exhibition the best and most significant items from this array of material and then to tell the fascinating and often romantic story of minerals and gems systematically and in such a way as to be interesting and meaningful both to the casual visitor and to the individual who already knows much about scientific geology. The millions of visitors who have already studied this new hall since it was opened to the public two years ago have seen, under almost ideal conditions of museum light, the outstanding specimens of the world's principal minerals. The chemical structure of each of the great mineral classes and the specific make-up of each specimen are shown. The physics of crystals, as well as many interesting facts about the geographical distribution of minerals in the world's crust, is explained in labels and diagrams. Outstandingly valuable and beautiful gems are shown as examples of specific mineral groups. These displays, taken as a whole, are at once scientifically instructive and esthetically pleasing.

This new hall, which an unthinking person might in advance picture as a mere collection of rocks, has thus become so attractive that on busy days it is sometimes even necessary for the visitors to form in lines and move quickly past some of the more popular exhibits.

All this is in sharp contrast to the old days, when only the student who already had a real knowledge of mineralogy had the patience and the interest to stay in the old exhibit rooms and study in detail what the crowded cases contained. The nongeologist who came to the old mineral hall could hardly be expected to carry away with him any new understanding of geology as one of the great and humanly important sciences. For the novice there was no "plot" in the old form of exhibition, and its relation to his general knowledge was not indicated. It is no wonder that this "visual storage" type of exhibit often left little lasting impression. Today all this has changed. The static and repetitious tall, dark, wooden-framed cases are gone, and the science of mineral identification has been given a new meaning.

The transformation that has taken place in this single mineral hall may be cited as illustrating the general change that has been brought about in the older Smithsonian buildings as the present program of modernization of exhibits, in all the new halls enumerated above, has progressed.

It is not accidental, therefore, that the number of visitors to the Smithsonian Institution has doubled in the past few years. What the Smithsonian now presents to its visitors has new attractiveness and new educational significance. In every museum the person who enters its doors profits by his prior preparation for understanding and by the ease with which he can see the objects that are on display. In the new Smithsonian exhibits, every effort is made to make each presentation logically clear and interesting so that the visitor will stop and read the explanatory labels. In this way, the Smithsonian exhibits improve the visitors' basic understanding of the natural history of America and of the world, of the history of many of the most important human arts and sciences, and of the technology that has made the modern world what it is. No one, for example, can go through the new American Cultural History Hall without seeing in a new way how Americans lived on this continent before the industrial revolution and how the coming of power machines transformed the basic ways of life of the Nation.

Thus the question as to what visitors gain by coming to the Smithsonian can be answered briefly: They gain in an understanding of the world in which they live and in their knowledge of America. Patriotism is a word that is sometimes misused, but who can doubt that any American citizen becomes more truly patriotic when he has knowledge of the basic natural resources of his country and of how these resources have been and are now used in the growth and maintenance of our modern life?

The increase in the number of visitors who come to the Smithsonian also indirectly reflects most favorably upon the basic attitudes of the citizens of our Nation today. It is inspiring to watch them passing in great streams through the doorways of our buildings. They come in order to see important exhibits, which they know in sum total can be viewed nowhere else in the world. Most of them surely leave with an understanding, which they could gain in no other way, of factors that have made modern life.

Some of the new exhibit halls that are now open in the Smithsonian's old Arts and Industries Building have been so constructed, by the use of portable panels, that when the new Museum of History and Technology is completed the whole display can be moved to the new building without unnecessary delay. When this is done, other exhibits of larger dimensions not at present on display will take their place in the old building. The professional staff is now working with exhibits experts in the preparation of other new halls so that there will be as little delay as possible in making the great new building an effective museum for the public as soon as its structure is complete.

Later pages of this report describe in detail the work done during the year by the staff of the Bureau of American Ethnology, the Smithsonian Astrophysical Observatory, the Freer Gallery of Art, the National Collection of Fine Arts, the National Air Museum, the Canal Zone Biological Area, the International Exchange Service, the National Zoological Park, and other specialized units of the Smithsonian.

May the opportunity be taken here to express, on behalf of everyone connected with the Smithsonian Institution, gratitude to the Congress of the United States for making available funds for the addition of a much-needed east wing to the Natural History Building and also for the air-conditioning and renovation of this old and important building. For more than a quarter of a century, published records show that Congress has recognized that the facilities of the Natural History Building are overcrowded and inadequate for the important scientific and museum functions assigned to it. It is a source of special rejoicing, therefore, that the Institution is now being allowed to develop facilities so that it will be able to accomplish far better scientific work in this building than was feasible in the past.

THE ESTABLISHMENT

The Smithsonian Institution was created by act of Congress in 1846, in accordance with the terms of the will of James Smithson, of England, who in 1826 bequeathed his property to the United States of America "to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." In receiving the property and accepting the trust, Congress determined that the Federal Government was without authority to administer the trust directly, and, therefore, constituted an "establishment," whose statutory members are "the President, the Vice President, the Chief Justice, and the heads of the executive departments."

THE BOARD OF REGENTS

The membership of the Board of Regents remained unchanged during the current year. The roll of Regents at the close of the fiscal year was as follows: Chief Justice of the United States Earl Warren, Chancellor; Vice President Richard M. Nixon; members from the Senate: Clinton P. Anderson, J. William Fulbright, Leverett Saltonstall; members from the House of Representatives: Frank T. Bow, Overton Brooks, Clarence Cannon; citizen members: John Nicholas Brown, Arthur H. Compton, Robert V. Fleming, Crawford H. Greenewalt, Caryl P. Haskins, and Jerome C. Hunsaker.

As has been customary in recent years, an informal dinner meeting, preceding the annual meeting, was held on the evening of January 14, 1960, in the main hall of the Smithsonian Building amid exhibits from the various divisions showing the most recent developments in the work of the Smithsonian bureaus. Dr. James F. Cahill spoke on "The Chinese National Art Collection (Palace Collection) in

Taiwan"; Dr. Richard S. Cowan on "Smithsonian-Bredin Caribbean Expedition of 1959"; Dr. William C. Sturtevant on "Agriculture of the Seminole"; and Dr. Fred L. Whipple on "Scientific Results from Satellite Tracking."

The annual meeting was held on January 15, 1960. The Secretary presented his published annual report on the activities of the Institution together with the 1959 Annual Report of the United States National Museum. The Chairman of the Executive and Permanent Committees of the Board, Dr. Robert V. Fleming, gave the financial report for the fiscal year ended June 30, 1959.

In addition to the annual meeting, the Board of Regents met again on May 4, 1960. The Secretary presented a brief interim report, and the Chairman of the Executive and Permanent Committees of the Board presented a financial report. This meeting was followed by an inspection of some of the new exhibits of the Smithsonian.

FINANCES

A statement on finances, dealing particularly with Smithsonian private funds, will be found in the report of the executive committee of the Board of Regents, page 214. Funds appropriated to the Institution for its regular operations for the fiscal year ended June 30, 1960, totaled $7,718,000. Besides this direct appropriation, the Institution received funds by transfer from other Government agencies as follows:

From the District of Columbia for the National Zoological Park	$1, 165, 200
From the National Park Service, Department of the Interior, for the River Basin Surveys	122, 055

VISITORS

Visitors to the Smithsonian group of buildings on the Mall reached a total of 6,494,630, an all-time high and 143,000 more than the previous year. April 1960 was the month of largest attendance, with 1,070,709; May 1960 second, with 1,007,442; July 1959 third, with 941,397. Table 1 gives a summary of the attendance records for the five buildings; table 2, groups of school children. These figures, when added to the 951,608 recorded at the National Gallery of Art and the 4,059,804 estimated at the National Zoological Park, bring the year's total number of visitors at the Institution to 11,506,042.

TABLE 1.—*Visitors to certain Smithsonian buildings during the year ended June 30, 1960*

Year and month	Smithsonian Building	Arts and Industries Building	Natural History Building	Aircraft Building	Freer Building	Total
1959						
July	123, 735	355, 316	311, 489	135, 584	15, 273	941, 397
August	126, 971	377, 340	295, 634	8, 078	16, 183	824, 206
September	52, 279	146, 086	117, 026	closed	8, 662	324, 053
October	54, 841	158, 749	109, 032	closed	7, 460	330, 082
November	45, 549	134, 169	113, 367	closed	6, 379	299, 464
December	29, 129	71, 139	79, 592	closed	5, 080	184, 940
1960						
January	36, 498	79, 557	86, 585	closed	6, 675	209, 315
February	38, 913	99, 156	88, 217	closed	4, 946	231, 232
March	43, 924	114, 124	106, 173	closed	6, 168	270, 389
April	174, 083	448, 872	348, 552	83, 571	15, 631	1, 070, 709
May	153, 306	388, 022	333, 461	118, 080	14, 573	1, 007, 442
June	160, 476	307, 504	229, 619	90, 755	13, 047	801, 401
Total	1, 039, 704	2, 680, 034	2, 218, 747	436, 068	120, 077	6, 494, 630

TABLE 2.—*Groups of schoolchildren visiting the Smithsonian Institution during the year ended June 30, 1960*

Year and month	Number of children	Number of groups	Year and month	Number of children	Number of groups
1959			*1960*		
July	21, 072	675	January	8, 898	289
August	8, 287	311	February	15, 236	378
September	3, 159	163	March	31, 626	807
October	16, 776	499	April	78, 896	1, 658
November	19, 292	515	May	94, 807	2, 052
December	10, 248	290	June	35, 723	812
			Total	344, 020	8, 449

Report on the United States National Museum

SIR: I have the honor to submit the following report on the condition and operations of the U.S. National Museum for the fiscal year ended June 30, 1960:

COLLECTIONS

During the year 2,014,443 specimens were added to the national collections and distributed among the eight departments as follows: Anthropology, 57,202; zoology, 346,610; botany, 56,989; geology, 33,079; science and technology, 1,433; arts and manufactures, 1,075; civil history, 1,514,274; and Armed Forces history, 3,780. Included in the above total were 1,488,864 stamps, 215,686 insects, and 75,014 marine invertebrates. Most of the specimens were acquired as gifts from individuals or as tranfers from Government departments and agencies. The Annual Report of the Museum, published as a separate document, contains a detailed list of the year's acquisitions, of which the more important are summarized below. Catalog entries in all departments now total 54,007,823.

Anthropology.—Among the items transferred to the Smithsonian Institution were a number of interesting ethnological objects presented to President Dwight D. Eisenhower during his recent eastern good-will tour. Included was a full-size Iranian desk of Khatamkari inlay made by the foremost craftsmen in the reign of Reza Shad and used by him and the present Shah. An excellent Mende (Sierra Leone) helmet mask, complete with raffia fringe, of the type used in initiating girls into the Sande Society, was presented by Mrs. Virginia Pollak. Two hundred specimens from the Wai Wai Indians, living in British Guiana, collected by Dr. Clifford Evans, associate curator, and Dr. Betty J. Meggers, research associate, division of archeology, were turned over to the division of ethnology. Included in this unique collection are wooden stools, cassava graters, pottery vessels, articles of clothing and ornament, tools, weapons, and utensils.

Mrs. E. E. Daman of Louisville, Ky., presented a fine Chinese imperial dragon robe of the late Ch'ing dynasty. An excellent walrus-ivory cribbage board, carved in relief with human and animal motifs, collected near Nome, Alaska, was received from Mr. and Mrs. W. De Witt of Erie, Pa. Articles of Korean costumes made of colorful silk brocade with subdued designs were donated by Lt. Col. and Mrs. G. W. Kelley of Alexandria, Va.

A special effort was made by the division of physical anthropology to incorporate in the collections the backlog of River Basin Surveys materials transferred from the Bureau of American Ethnology. The most outstanding transfer consists of 148 skeletons from the Sully site in the Oahe Reservoir, S. Dak., occupied in prehistoric times by the Arikara tribe. An important collection of 167 plaster-of-paris face masks of various peoples, mainly from Africa, acquired from Dr. Lidio Cipriani of Florence, Italy, help to fill in the ethnic gaps in the division's large group of face masks and busts. The Cipriani collection will also provide masks for display units in the exhibits modernization program. A new cast of the skull and lower jaw of the Skhül V, one of the Palestine Neanderthal specimens, was received as an exchange from the Peabody Museum, Harvard University. The Wenner-Gren Foundation for Anthropological Research presented a cast of the upper jaw of *Zinjanthropus boisei*, a lower Pleistocene australopithecine from Tanganyika. A bust of Dr. Aleš Hrdlička, late curator of the division of physical anthropology, sculptured by Milan Knobloch, was received as a gift from the National Museum Society in Prague, Czechoslovakia.

A total of 56,271 specimens was added to the collections of the division of archeology during the year. Objects from a prehistoric Oklahoma mound consisting of rare textiles, engraved conch shells, pottery vessels, native copper artifacts, pearls, stone pipes, and chipped stone comprised the outstanding acquisition. Other items came from the Spiro Mound site in Le Flore County, dating probably from the 13th or 14th centuries of the Christian Era and representing a high point in the ceremonial art of the Southeastern United States.

Zoology.—The division of mammals received 4,242 specimens comprising 50 accessions. Nearly half of this number came from Panama and the Canal Zone under a collecting program being carried out by Associate Curator Charles O. Handley in cooperation with the Gorgas Memorial Laboratory, units of the Department of Defense, and also individuals. Through Dr. Robert E. Kuntz, of the U.S. Naval Medical Research Unit No. 2, more than 300 mammals were received from Formosa. Dr. Robert Traub, of the Army Research and Development Command, contributed important collections from Malaya, Borneo, and western Mexico. The division also received specimens obtained in Indiana by Russell E. Mumford, Dwight M. Lindsay, and Ralph D. Kirkpatrick; in Lancaster County, Va., by C. O. Handley, Louis T. Dymond, and D. I. Rhymer; in Maryland by C. P. Lingebach; and in New Hampshire by Bernard Feinstein.

Two lots of Panamanian birds, comprising 1,313 bird skins, 93 skeletons, and 1 carcass, all collected by Dr. A. Wetmore, were acquired by the division of birds. Other significant accessions were 749 skins, 43 skeletons, and 1 alcoholic specimen of North American birds transferred from the U.S. Fish and Wildlife Service; 246 birds from Formosa transferred from the U.S. Naval Medical Research Unit No. 2; 123 bird skins from Colombia by exchange with the Universidad Nacional de Colombia, Bogotá; and 236 birds from Bechuanaland and Southern Rhodesia obtained by purchase.

Small but noteworthy lots of reptile and amphibian material were received from areas previously unrepresented in the national collections. The most interesting of these are: 14 reptiles from Saudi Arabia, donated by Dr. R. L. Peffly; 6 reptiles from Swan Island near Honduras, transferred from the Coast and Geodetic Survey; and 23 specimens of *Leurognathus marmoratus*, a very rare species of salamander, from Georgia, the gift of Dr. B. S. Martof.

During the year 8,500 fresh-water fishes, collected by W. R. Taylor and R. H. Kanazawa in the southern Appalachians, and 2,285 deep-sea fishes from the western Atlantic, transferred from the Fish and Wildlife Service, were accessioned. A 15-foot thresher shark, a cast of which will be placed on exhibition, was donated by Harvey Bullis, Jr. This shark is unique because of its long tail.

The scale-insect (coccid) collection deposited by the Department of Entomology, Cornell University, estimated to contain about 50,000 specimens including many types, comprised the most important accession in the division of insects. The John S. Caldwell collection of nearly 13,000 lanternflies and psyllids and the Mark Robinson collection of 16,210 scarab beetles were also acquired. About 16,969 miscellaneous insects from various parts of the world were given by N. L. H. Krauss; O. L. Cartwright donated an additional 10,000 scarab beetles from his personal collection, and he also collected 2,774 specimens for the Museum; Dr. K. V. Krombein contributed 3,467 specimens of mostly Hymenoptera and Lepidoptera; and Dennis E. Puleston presented 2,764 miscellaneous arthropods collected by him in Tahiti.

This fiscal year was a record-breaking one for accessions of marine invertebrates. The most important and comprehensive of these are 6,900 shrimps and other invertebrates from the tropical and subtropical western Atlantic transferred from the Fish and Wildlife Service; a lot of 12,475 Antarctic invertebrates received from the Navy Hydrographic Office; about 2,400 identified medusae from the Arctic Ocean received from the Department of the Navy; more than 18,000 crustaceans from northern Alaska presented by Dr. E. E. Reed of Colorado State University; and over 24,000 crustaceans and other invertebrates, mostly from Lake Pontchartrain, received from Tulane University.

The Frances Lea Chamberlain bequest provided funds for the purchase of the C. R. Laws collection of about 12,500 mollusks assembled by one of New Zealand's outstanding malacologists. The second largest accession was a gift from W. E. Old, Jr., of 8,200 mollusks, representing many rare and otherwise important species. Two noteworthy collections of Pacific marine mollusks were received, totaling about 3,900 specimens.

Botany.—Among the important plant collections received as exchanges were 3,793 specimens from the Muséum National d'Histoire Naturelle, Paris, including 3,050 ferns, many of them isotypes, and valuable historic collections such as those of L'Herminier from Guadaloupe, Leprieur from French Guiana, and Bourgeau from Mexico; 5,808 plants of Indonesia from Herbarium Bogoriense, Bogor, Indonesia; and 2,582 photographs of type specimens received from the Chicago Natural History Museum. Other collections include 896 specimens acquired from the Texas Research Foundation, Renner, Tex., and collected by Dr. C. L. Lundell and Percy Gentle in Texas, Mexico, and Central America; 587 specimens received from the Gray Herbarium, Harvard University, and collected in Costa Rica by Miss Edith Scammon and in Peru by Dr. and Mrs. Rolla M. Tryon; and 162 plants of Israel from the Hebrew University, Jerusalem.

Gifts included 4,498 plants collected on Trinidad, Tobago, and other West Indian islands by Dr. Richard S. Cowan on the 1959 Smithsonian-Bredin Caribbean Expedition; 5,476 plants presented by Dr. José Cuatrecasas, collected by him in Colombia; 1,226 excellent specimens of Pennsylvania plants given by Muhlenberg College, Allentown, Pa.; 396 specimens, largely ferns, constituting the personal herbarium of the late Frank N. Irving, received from Mrs. Florence Skougaard, Washington, D.C.; and 855 specimens collected in Santa Catarina, Brazil, by Rev. Pe. Raulino Reitz and R. Klein, received from the Herbário "Barbosa Rodrigues," Santa Catarina.

Curator C. V. Morton collected 1,395 plants in boreal Quebec and Ontario while on a field trip preceding the IX International Botanical Congress at Montreal; and Robert R. Ireland obtained on field trips 2,678 mosses from Virginia, Missouri, and Kentucky. Transferred from the U.S. Geological Survey were 1,868 plants of Polynesia collected by Dr. F. R. Fosberg and 1,348 plants of Alaska collected by Dr. L. A. Spetzman. Obtained from Dr. M. Jacobs, Leiden, Netherlands, were 611 plants collected by him in Borneo, and from the University of Zurich 615 specimens from New Caledonia.

Geology.—Among the important gifts received in the division of mineralogy and petrology are: A 740.25-carat carbonado diamond, French Equatorial Africa, from Diamond Distributors, Inc., the largest mass of black diamond in any museum in the United States and possibly in the world; kurnakovite, Boron, Calif., from Arch Oboler; and a fine Australian opal weighing 25.5 carats, a part of the original Washington A. Roebling collection, from Mrs. Donald Roebling.

Outstanding among the mineral specimens received in exchange are: Arsenopyrite from Mexico, metaheinrichite from Oregon, inderite from California, the Ahlfeld collection of Bolivian minerals, and a selection from the Pennypacker collection of minerals of Cumberland, England. Newly described species acquired in exchange are: Strontioginorite, Germany; orthochamosite, Czechoslovakia; gastunite, Arizona; eardleyite, Utah; belyankinite and labuntsovite, U.S.S.R.

About 457 specimens were added to the Roebling collection by purchase from the Roebling Fund and by exchange. Among these the following are outstanding: Danburite, Mexico; apophyllite and spodumene, Brazil; and tourmaline, California. Among the specimens of outstanding exhibition quality added to the Canfield collection by purchase are: Corundum, Tanganyika; hemimorphite, Mexico; opal, Australia; hubnerite, Colorado; stibnite, California; and the newly described yoderite.

Gems acquired for the Isaac Lea collection by purchase through the Chamberlain Fund include a cat's-eye sillimanite from South Carolina; a tourmaline cat's-eye from Brazil weighing 76 carats; a 29-carat yellow apatite from Mexico; a 375-carat rose quartz from Brazil; a cut stone of microlite weighing 3.7 carats from Virginia; and a 48.2-carat colorless zircon from Ceylon.

Several meteorites new to the collection were received in exchange: Lillaverke, Varik, Laughalsen, Muonionalusta II, Ekeby, Follinge, Hedaskoga, and Homark, all from Sweden; Ramsdorf, Germany; Raco, Argentina; and Aswan, Egypt. A portion of the Al Rais, Saudi Arabia, meteorite was received as a gift from the Saudi Arabia Government, and W. S. Houston donated a portion of the Winkler, Kans., fall.

The most important gifts received by the division of invertebrate paleontology and paleobotany are: 600 Cambrian invertebrate fossils including types from the Wind River Mountains from Dr. Christina L. Balk; 2 lots of Cretaceous and Tertiary Foraminifera from Trinidad donated by Dr. Hans M. Bolli; 70 figured specimens of pelagic Foraminifera from the north and equatorial Pacific Ocean from Dr. John S. Bradshaw; 2,025 invertebrate fossils from eastern Fiji from the University of Rochester; 226 invertebrate fossils from MacKenzie Valley, Northwest Territories, Canada, from Alfred Lenz; 9 giant Eocene oysters from North Carolina from Eston Miller; 44 holotypes of Foraminifera from the Cretaceous and Lower Tertiary of New Jersey from R. K. Olsson; 56 Eocene crabs from Venezuela from Dr. W. M. Furnish; and 13 type specimens of Mississippian sponges from Montana from Dr. R. C. Gutschick.

Funds from the income of the Walcott bequest permitted the purchase of 37 invertebrate fossils from Czechoslovakia, 1,095 specimens from the Pennsylvanian of Oklahoma, 189 invertebrates from Normandy, France, 35 rare brachiopods from Sicily, 1,146 Mesozoic echinoids from France, and 507 invertebrate fossils from Belgium.

Important exchanges received through the year included 160 Devonian invertebrate fossils from Northwest Territories, Canada, from Dr. W. G. E. Caldwell; 115 fossil mollusks and corals from the Island of Pavuvu in the South Pacific from James E. Conkin; and 1,100 Tertiary invertebrate fossils from Japan from Tohoku Imperial University.

Paleontological fieldwork by Dr. C. L. Gazin and Franklin Pearce under the Walcott Fund resulted in the collection of 200 fossil mammals from various Eocene strata of southwestern Wyoming. Among other outstanding additions to the vertebrate paleontology collections received as gifts are two record-sized tracks of carnivorous dinosaurs from Upper Cretaceous rocks in Utah, presented by the Kaiser Steel Corporation, and a unique skull of the Cretaceous fish *Anamogmius zitteli* donated by Dr. J. Lloyd Watkins, Wichita Falls, Tex.

Science and technology.—An outstanding collection of 21 astrolabes was acquired by the division of physical sciences through the generosity of the International Business Machines Corporation. These instruments, representing the craftsmanship of Persia, India, North Africa, and Europe, date from the 13th to the 19th centuries. An equally elegant 16th-century instrument, presented by Lessing J. Rosenwald, is a folding sundial and compass to which several engraved maps and travelers' itineraries of central Europe have been added.

Other important additions included the magnetometer used by Alexander Dallas Bache at Girard College (1840–45), from the Carnegie Institution; the first cash register of James Ritty (1879), from the National Cash Register Co.; several examples of the first nylon produced, from E. I. du Pont de Nemours & Co.; and a replica of the experimental furnace used by Dr. Alwin Mittasch in connection with the development of the commercial synthesis of ammonia (1909–12), from the Badische Anilin and Soda-Fabrik AG.

The tools and machine of the famous American instrument firm of Wm. Bond & Son, Boston, were acquired by the division of mechanical and civil engineering. Included are a chronometer dated 1812, the first made in this country, and an example of William Bond's important invention, the chronograph. Other important acquisitions are a rare wooded-bed engine lathe of about 1830 and several lathes and associated machine-shop fixtures of about 10 years later. These items were located in an abandoned Rhode Island shop through the help of Helen I. Fraser, of the New London Historical Society, and James Kleinschmidt, of Mystic Seaport, Conn.

Among a number of significant builder's half-models received by the division of transportation were two Cape Cod catboats from Marthas Vineyard, the gift of Manuel S. Roberts. The collections of the section of land transportation were augmented by the locomotive "Pioneer" and a Camden & Amboy Railroad coach from the Pennsylvania Railroad Co.

The division of electricity received from the National Bureau of Standards several wavemeters used in the standardization of radio equipment in the 1920's, and from the University of Michigan a Fleming cynometer and several early magnetrons. The Massachusetts Institute of Technology donated the G. H. Clark collection of documents and photographs on the history of radio.

Among the accessions acquired by the division of medical sciences are a 13th-century metal mortar and pestle made in Nishapur, Persia; an 18th-century microscope made by Dollond of London; a 19th-century set of brass Troy nested weights; and one of the earliest types of ionization chambers designed for practicing radiologists.

Arts and manufactures.—Among specially noteworthy fabrics acquired by the division of textiles are a collection of Jacquard-woven pictures, a 19th-century warp-printed scene requiring over 100 blocks to produce one repeat, and a roller-printed portrait on silk, all presented by Arthur E. Wullschleger. An interesting lot of 19th-century plush, beaded, and embroidered fabrics was presented by Dr. and Mrs. Leonard Carmichael. George C. Claghorn donated a handwoven linen tablecloth. An unusual damask tablecloth, woven in 1860, with scenes from stories in the Old Testament, was presented by Mrs. Loren E. Souers. The first pair of experimental nylon hose made in 1937 and several bobbins of the early experimental nylon yarn were deposited by E. I. du Pont de Nemours & Co.

From Mrs. Dwight D. Eisenhower the division of ceramics and glass received a 13-piece porcelain tea set, produced about 1770 in Würtemberg, Germany, by the Ludwigsburg factory, one of the greatest of the 18th-century porcelain manufactories. The set was presented to President and Mrs. Eisenhower by His Excellency Theodor Heuss, President of the Federal Republic of Germany. Another generous gift of 102 pieces of American and European glass was received from Mrs. Clara W. Berwick. An outstanding art object in this group is a dark-blue glass plate with an enameled decoration taken from the 12th-century mosiac in one of the domes of St. Mark's Cathedral in Venice.

Among the particularly fine prints acquired by the division of graphic arts are an impression of a chiaroscuro woodcut, "David and Goliath," by one of the earliest masters of this art, Ugo da Carpi (1455–1523); two color etchings by Johan Taylor (1650–1700), the earliest pioneer in this medium; a large color mezzotint, "Cupid Shaping His Bow," by Edouard Gautier-Dagoty (1717–1785); and a chiaroscuro woodcut, "Pluto," by the Dutch artist Hendrick Goltzius (1558–1616). Outstanding gifts of the year included a collection of 255 portrait engravings by European artists of the 16th to 19th centuries presented by Col. and Mrs. Robert P. Hare, III, representing the work of such artists as Wierex, Bolswert, Leoni, Muller, Audran, and Nanteuil, and including contemporary portraits of such personages as Philip II, Charles I, Galileo, Sir Thomas Chaloner, and Thomas Carlyle.

Several specimens representative of the development of oilfield exploration equipment were acquired by the division of industrial cooperation, one of these being a 1925 Suess torsion balance. A portable pipeline pumping unit as developed by S. S. Smith of the Shell Oil Co., and first used in the North African campaign of 1942–43, was transferred from the Department of the Army. Among the items acquired for the hall of nuclear energy were a diffusion cloud chamber and a neutrine detection chamber, transferred with the cooperation of the National Science Foundation. Everett L. DeGolyer, Jr., presented a memento of his late father, Dr. Everett Lee DeGolyer, a pioneer in American oilfield development and a former Regent of the Smithsonian Institution. This electromagnetic detector for reflection seismographic exploration was developed by Dr. J. Clarence Karcher with Dr. DeGolyer's encouragement and is symbolic of the predominance of this technique in oilfield discovery since 1925.

A large number of farm implements and machines were acquired by the division of agriculture and forest products, many of which came from farms in Ohio. One of these is an early type of horse-drawn check-row cornplanter, donated by Clayton Kantner. Another is the Hart Parr tractor donated by the Oliver Corporation. This machine is the third tractor made by the Hart Parr Co., which commenced manufacturing in 1902. It symbolizes the switch from steam to gasoline on American farms and commemorates the general adoption of the name "tractor" as descriptive of gasoline traction engines. A companion piece to the big tractor is a Wallis Model K tractor donated by Massey-Ferguson, Inc. This model appeared in 1919 and is a modification of the 1913 Wallis Cub, the first of the frameless tractors. Another item is a McCormick "daisy" self-rake reaper donated by the Farmers' Museum of the New York State Historical Association.

Civil history.—The division of political history received a number of interesting donations. President Dwight D. Eisenhower presented a group of intricately carved figures, chariots, and horses, in ivory and sandalwood, representing a scene from the Mahabbarata, given to him by the President of India. Among the items given this year by Lincoln Isham were the gold-and-enamel bracelet worn by Mrs. Lincoln as First Lady and a black onyx lapel watch worn by her after the death of her husband. The dessert plates from the state china used at the White House during the administration of President James K. Polk were given by Mr. and Mrs. B. Woodruff Weaver. Additions to the collection of American period costumes included a wedding dress of about 1800, given by Mrs. Susan Iglehart; an 18th-century woman's brocade caraco jacket, presented by Mrs. James L. Collins, Jr.; and two dresses worn in Maryland in Colonial days, donated by Miss Katherine K. Scott.

From the family of Harry T. Peters the division of cultural history received the America-on-stone collection, comprising nearly 2,000 lithographs by printmakers other than Currier and Ives. Political cartoons, sporting pictures, and urban views are only a few of the many classifications in which the collection has authoritative representation. The Cooper Union Museum donated a group of 89 musical instruments, predominantly plucked-string instruments such as lutes and guitars, which were needed to supplement existing collections. An important transfer from the National Park Service comprises 37 pieces of mid-19th-century cast-iron architectural elements from the waterfront district of St. Louis.

Among important accessions received in the division of philately and postal history is the A. H. Wilheim collection of United States plate number and position blocks of stamps of the period between 1894 and 1958. Nearly every printing plate used in the production of United States stamps is represented in all positions. An excellent reference collection of Japan's 1-sen value postage stamps of 1872 was donated by L. W. Christenson. John P. V. Heinmuller presented one album of Zeppelin covers, completing the transaction started last year. B. H. Homan, Jr., transferred his previously lent specimens of Saxony stamps as a gift. Supreme Court Justice John M. Harlan donated a considerable number of early United States covers extracted from the papers of his grandfather, Supreme Court Justice John M. Harlan (1833–1911).

The most important accession received by the division of numismatics is the collection of Russian coins and medals struck in the name of Czar Peter the Great, donated by Willis H. Du Pont. Mr. Du Pont also presented the 11 volumes of Grand Duke Mikhailovich's monumental and very rare monograph on Russian coins. The Grand

Duke's collection comprises a virtually complete representation of Russian bronze and silver coins struck since 1700, paralleled only by the Hermitage collection in Leningrad. Another noteworthy accession is the anonymous donation of 736 Canadian silver and copper coins, including the rare and famous 50-cent piece of 1921 formerly owned by King Farouk of Egypt.

Armed Forces history.—One of the three original 49-star flags prepared in advance of the new design was presented to the division of military history by President Dwight D. Eisenhower. Two exceptionally fine swords owned by Gen. Benjamin Lincoln of the Continental Army were received from one of his descendants, Mrs. Henry K. Cowen. One was carried by the General during the Revolution and the other was presented to him by General Washington after General Lincoln received the surrender of Lord Cornwallis at Yorktown.

Outstanding among the naval material received during the year was a collection of 134 builder's half-models of 19th-century warships, constituting a veritable national treasure by virtue of its exceptional scope, from the United States Naval Academy. Other notable accessions included models of the U.S.S. *Pennsylvania* (the birthplace of carrier aviation), the aircraft carrier *Shangri-La*, and the dirigible *Akron;* 13 oil paintings illustrating United States Coast Guard operations in World War II, from the Treasury Department; and a collection of relics of the Spanish American War and World War II, from the United States Coast Guard Academy.

The collections were further enhanced by the purchase of the W. Stokes Kirk collection of United States military insignia and accouterments, totaling approximately 3,000 items. It is considered by many authorities to be unmatched in scope, volume, and rarity.

EXPLORATION AND FIELDWORK

In connection with his participation in the 75th anniversary meeting of the Ohio Historical Society, April 27–May 2, at Columbus, F. M. Setzler, head curator of anthropology, examined several important archeological sites in Ohio, including Mound City, the Hopeton Works, Cedar Banks Mound, and the site of the original Adena Mound on the estate of the first Governor of Ohio, Thomas Worthington. While at Columbus he selected specimens from the study collections of the Ohio State Museum, to be cast for use in the modernization of the Smithsonian's North American Archeology Hall.

Dr. Waldo R. Wedel, curator of archeology, represented the Smithsonian Institution at the Darwin Centennial Celebration, held at the University of Chicago, November 24–26. This was an outstanding occasion, being attended by worldwide experts in various fields of evolutionary philosophy who conducted and participated in panel meetings. The published results are sure to be of interest to all biologists and other scientists concerned in any way with evolution and its background. Subsequently, Dr. Wedel attended the 17th Plains Archeological Conference, in Lincoln, Nebr., where he reestablished contacts with many of the workers in the area of his principal interest, conferred with various archeologists of the River Basin Surveys, and examined recent archeological collections. Early in May Dr. Wedel attended the 25th annual meeting of the Society for American Archeology, at New Haven, Conn., presenting a paper on the progress of research in Great Plains prehistory. He also studied various important manuscripts in the Western Americana collections of the Yale University Library particularly relating to the Missouri River region and the Black Hills.

Dr. Clifford Evans, associate curator of archeology, and Dr. Betty J. Meggers, research associate, late in December attended the 58th annual meeting of the American Anthropological Association in Mexico City, where they delivered a paper on "Archeological Evaluation of Obsidian Dating." The gathering in Mexico City, they report, had the flavor of an international meeting, which left a favorable impression on delegates who seldom attend anthropological meetings outside the limits of the United States. The Mexicans were considerate hosts, and all visitors were highly impressed with the Institute of Anthropology and History and the various museums and exhibits in the Mexico City area. Following the meeting, Drs. Evans and Meggers spent several weeks in Mexico, examining archeological collections and sites in Tabasco, Chiapas, and Oaxaca, as well as the environs of Mexico City. Dr. Evans arranged to have certain important type collections sent to the Smithsonian, saw some archeological sites of major importance in Mesoamerica, familiarized himself with study and exhibit collections in several regional museums, and made contact with many colleagues.

Dr. Evans attended the 25th annual meeting of the Society for American Archeology at New Haven, Conn., May 4–7, and consulted with various archeologists involved in the Institute of Andean Research program seeking archeological connections between North and South America and Middle America. This group, including Drs. Evans and Meggers, will undertake an elaborate research program in the region during the next few years.

Dr. Evans and Dr. Meggers left on June 25 for extended study in various European museums, where they propose to do research on comparative archeological collections from North and South America. This work is undertaken in connection with their long-term program of archeological survey and excavation in the tropical forest region of South America and is partially supported by a grant from the American Philosophical Society.

At a meeting of the American Oriental Society in New Haven, Conn., late in March, Dr. Gus Van Beek, associate curator of archeology, delivered a paper on one of his research projects, "The Multiple-piece Technique of the South Arabian Potter." While in New Haven he also studied the exhibits of the Peabody Museum and the Babylonian Collection in the Sterling Memorial Library, acquiring information about the technique of preparing impressions of seals which will be useful in the modernization of the Old World archeological exhibits. In May he worked in the library of the Johns Hopkins University, Baltimore, preparing a bibliography of major books and articles dealing with excavated archeological sites in the Republic of Sudan. This work has been useful in his research on the archeological potentialities of that part of the Sudan involved in the Nubia Salvage Project.

Dr. S. H. Riesenberg, curator of ethnology, at the end of December attended the American Anthropological Association meeting in Mexico City, where he delivered a paper on "Political Advancement on Ponape: Theory and Fact." Subsequent to the meetings he examined collections in several museums and visited the archeological sites at Teotihuacan and the village of Toluca. Between February 28 and March 8, Dr. Riesenberg furthered his Pacific ethnological studies by working at the Houghton Library of Harvard University and the Marine Historical Society and Whaling Museum at New Bedford, Mass. He was particularly concerned with examining and abstracting ethnohistorical materials from 19th-century manuscript records of the American Board of Commissioners for Foreign Missions. At New Bedford there exist similar records in the important collections of logs, journals, and manuscripts on early Pacific voyages. These library studies have enabled Dr. Riesenberg to make further progress on his projected ethnohistorical study of the Carolines, which is part of his analysis of Micronesian culture.

Dr. Gordon D. Gibson, associate curator of ethnology, early in September did research at the American Museum of Natural History and the Museum of Primitive Art in New York. Subsequently he attended the meetings of the African Studies Associations at Boston University and did research in the study collections of the Boston Museum of Fine Arts and the Peabody Museum of American Archeology and Ethnology at Harvard University. The collection of African ethnological materials at the American Museum is an extensive one, and Dr. Gibson is discussing the possibility of arranging exchanges that would permit the Smithsonian Institution to improve its collections and provide material for a new exhibit hall in this field. He especially studied collections from South West Africa and Angola, a region he expects to visit in 1960.

Late in December Dr. Gibson attended the annual meeting of the American Anthropological Association in Mexico City and presented a paper to the session on African ethnology on "Levels of Residence among the Herero." Subsequently, with several other delegates, he went to Palenque in Chiapas Province, an area of great interest anthropologically. The visitors examined the famous pyramid containing a tomb which is said to destroy the distinction formerly drawn between Egyptian and American pyramids. Until the discovery of this tomb, it had been stated that American pyramids were never tombs, but only the bases for religious structures. Dr. Gibson also examined anthropological collections in Mexico City.

In preparing for his forthcoming field trip Dr. Gibson visited New York and Cambridge, Mass., in March to investigate sources of field equipment. In Cambridge he consulted with Laurence Marshall, director of several expeditions in southern Angola and South West Africa, about problems of field maintenance and motion-picture work in those areas.

Dr. Eugene I. Knez, associate curator of ethnology, attended the annual meeting of the Association for Asian Studies in New York City, April 10–12. The scientific papers dealt with the people and cultures of southern, southeastern, and eastern Asia. In Cleveland, following this meeting, Dr. Knez examined the pipe collection of Dr. Leo Stoor and visited staff members of the Cleveland Museum of Natural History to discuss possible exchange of ethnological material.

Early in December, Dr. T. Dale Stewart, curator of physical anthropology, visited Guatemala to confer with staff members and advisers of the Institute of Nutrition of Central America and Panama. The problem involved was the planning of a 5-year program directed toward the investigation of atherosclerosis in Latin America populations. Dr. Stewart participated as a consultant in matters of race.

On December 26 Dr. Stewart went to Mexico City primarily to attend the meetings of the American Anthropological Association, where he delivered two papers—"The Evidence of Physical Anthropology Bearing on the Peopling of the New World" and "The Chinook Sign of Freedom: a Unique Record of Cranial Deformity." With other anthropologists he joined a tour to the Mayan ruin of Palenque, a ruin which makes it easier for an anthropologist to comprehend the problems surrounding the rise and fall of the Mayan civilization. He also visited Lake Patzcuaro in western Mexico, where he was able to observe living Tarascan Indians, a group which has figured prominently of late in the literature of physical anthropology.

In continuation of archeological research in Iraq, Dr. Stewart departed for that country on June 1. The 1960 Shanidar Expedition, jointly sponsored by the Smithsonian Institution and Columbia University, extends the collaboration between Dr. Stewart and Dr. Ralph S. Solecki, formerly on the staff of the division of archeology. Dr. Stewart plans to work at the Iraq Museum in Baghdad restoring, casting, and studying the adult skeletal remains recovered in 1957 by Dr. Solecki in the Mousterian layer of Shanidar Cave, and will then join the rest of the party at the Cave to help remove other remains.

Several members of the staff of the department of botany, Dr. Lyman B. Smith, Dr. Richard S. Cowan, Dr. Velva E. Rudd, C. V. Morton, and Dr. Mason E. Hale, Jr., with Dr. A. C. Smith, Director of the Museum of Natural History, participated in the IX International Botanical Congress in Montreal in August. This important Congress, which convenes only once every five years, in 1959 attracted more than 3,000 botanists from all parts of the world and was held in simultaneous sessions at McGill University and the University of Montreal. It was preceded from August 16 to 19 by meetings of the section of nomenclature, which involved several of the Smithsonian's botanists.

In May and June Dr. Lyman B. Smith, curator of phanerogams, visited several major herbaria in California in pursuit of his studies of the plant families Bromeliaceae, Xyridaceae, and Velloziaceae. He also studied a number of collections of living Bromeliaceae and of the genus *Begonia* in Los Angeles and conferred with various members of the Bromeliad Society and the American Begonia Society.

In June Dr. Richard S. Cowan, associate curator of phanerogams, visited several American museums to observe natural-history exhibits, to test audio-commentary systems, and to study exhibition techniques in connection with the proposed Hall of Plant Life at the Smithsonian.

Continuing her studies of the family Leguminosae, Dr. Velva E. Rudd, associate curator of phanerogams, visited several herbaria during the year. Following her attendance at the IX International Botanical Congress in Montreal, she spent three days at the New York Botanical Garden examining types and other specimens of genera closely related to *Ormosia*, and also the available Mexican material of papilionate legumes of the tribe Sophoreae. She made similar studies of the same groups at the herbarium of the Chicago Natural History Museum in connection with her attendance at the annual meeting of the American Association for the Advancement of Science in December. In May she spent three weeks at California herbaria examining plant specimens and accumulating data pertaining to a treatment of the papilionate legumes of Mexico.

In continuation of his studies of the large family Melastomataceae, Dr. J. J. Wurdack, associate curator of phanerogams, visited the New

York Botanical Garden in May, giving particular attention to the family as represented in the state of Santa Catarina, Brazil. To facilitate his continuing studies of the Melastomataceae, he borrowed numerous specimens for more detailed investigations.

During the first part of August, prior to his attendance at the IX International Botanical Congress in Montreal, C. V. Morton, curator of ferns, participated in a field trip to James Bay. This included explorations in the Laurentian forest, the boreal forest of northern Ontario, the Hudson Bay lowlands, and a part of the Great Lakes forest region. A collection of nearly 900 numbers, plus many duplicates, was obtained for the U.S. National Herbarium. Following his attendance at the Congress, Mr. Morton spent 10 days in the high Sierra Nevada of California collecting specimens for the Museum. Subsequently he visited herbaria in the San Francisco region, examining fern collections and conferring with staff members. Toward the end of the fiscal year Mr. Morton left for Europe to pursue his studies of various groups of ferns in several herbaria, beginning in the herbarium of the Muséum National d'Histoire Naturelle in Paris.

Between March 9 and April 11 Dr. Mason E. Hale, Jr., acting curator of cryptogams, journeyed to southern Mexico to collect lichens for a monographic revision of *Parmelia*. This expedition was sponsored in part by the National Science Foundation, and Dr. Hale was accompanied by Thomas R. Soderstrom, a graduate student from Yale University. During a 30-day period of uninterrupted work, the two botanists traveled about 2,500 miles in Veracruz, Chiapas, Oaxaca, and Michoacán, collecting approximately 2,200 numbers of cryptogams with many duplicates. This was the first significant exploration for cryptogams in southern Mexico, and many new distribution records, as well as discoveries of new taxa, were made. The specimens, which are now being prepared for study in Washington, will serve as a basis for specialized studies of cryptogams of the region and particularly as a partial basis for Dr. Hale's revision of the large and widespread genus *Parmelia*. During the first three days of June Dr. Hale visited the herbarium of Duke University to study lichen specimens and consult with colleagues on mutual problems concerning the genus *Parmelia*, in connection with his monographic revision.

In mid-July, Robert R. Ireland, Jr., assistant curator of cryptogams, collected cryptogams for the National Museum particularly in the Highlands area in the southwestern corner of North Carolina, and in the Great Smoky Mountains National Park on the North Carolina-Tennessee border. He obtained more than 800 specimens, mostly bryophytes, which will serve as a partial basis for his study of the moss flora of the southern Appalachians.

In December, Dr. Herbert Friedmann, head curator of the department of zoology, attended the meetings of the American Association for the Advancement of Science, in Chicago. As chairman of Section F, he gave an address on "Current Changes in the Environment of Zoological Research" at the zoologists' annual dinner. During the meetings he visited colleagues in the Chicago Natural History Museum and discussed problems of mutual interest in connection with his current research.

The detailed survey of the birdlife of the Isthmus of Panama under Dr. Alexander Wetmore, research associate and retired Secretary of the Smithsonian Institution, continued early in January in the tract of land on the Río Frijoles near Gamboa that, through a cooperative arrangement with the Naval authorities in the Canal Zone, is now available as an adjunct to the reserve on Barro Colorado Island. Dr. Wetmore spent the last half of January investigating several localities in the Pearl Islands in the Gulf of Panama. Collections made on the islands of Contadora, Chapera, Saboga, Cañas, Rey, Santelmo, Malaga, and Bayoneta yielded useful details of distribution. The remainder of the season from early February to the end of March he devoted to studies near the Costa Rican boundary in western Chiriquí. The main station, through the kindness of Pablo Brackney, was at the finca Palo Santo at 4,200 feet elevation, near the base of Cerro Picacho. From here collections were made through the plateau section at Tisingal, around the lakes and elsewhere, and in the mountains to an elevation of 7,500 feet on Volcán Barú. A brief visit to the Boquete area on the opposite side of the volcano added to the collections several species of birds not found previously. During the first part of March the work was concentrated on the lowland region below Concepción, where, through the friendly attention of Félix Espinosa, the party located on a finca at 2,200 feet elevation. Tracts of forest were accessible in the upper valley of the Río Escarrea. The main investigations were made lower down below Alanje, travel being by jeep over the sandy trails of the coastal plain. The work here extended across savanna country with occasional tracts of forest down to the seashore at Playa Barqueta and Ensenada Rica. At the end of March, with the season's work completed, the party returned to the Canal Zone.

With the cooperation of the Mexican Government, the Smithsonian-Bredin Expedition for 1960 undertook to collect for study and to report on specimens of the marine fauna and flora (algae) occurring along the coast of Yucatán from Progreso east and south to Espíritu Santo Bay, Quintana Roo. Five zoologists comprised the scientific staff: Dr. Waldo L. Schmitt, research associate, Dr. J. F. Gates Clarke, curator of insects, and Dr. Harald A. Rehder, curator of mollusks, all of the Smithsonian Institution; Dr. Franklin C. Daiber, Department of Biological Sciences, University of Delaware, ichthyologist and ecologist, whose chief interest was in making an ecological study of a mangrove swamp and its associated fish population; and Dr. Edward L. Bousfield, curator of invertebrate zoology, National Museum of Canada, a carcinologist specializing on barnacles and amphipod crustaceans.

The expedition sailed on March 20 from Miami with Drs. Rehder and Schmitt and the expedition's collecting outfit, arriving in Progreso, Yucatán, a few days later. There Drs. Clarke, Daiber, and Bousfield joined the expedition, which departed on March 26 for Isla Mujeres, where they spent a few days gathering shallow-water animal life and algae. From here the party went to San Miguel, Isla Cozumel, for the first three days of April. At this locality they made collections on the coast and also along shore by diving and with the electric light and dipnet over the ship's side at night. They spent the next few days reconnoitering Espíritu Santo and Ascensión Bays and collected at the northern end of Cozumel from shore out to a depth of two fathoms, by diving, and also at Punta Molas, near the lighthouse, and in the shallow brackish lagoon at the northern end of Cozumel.

The period April 10 to 19 was devoted primarily to Dr. Daiber's ecological study of portions of the great mangrove swamp in Ascensión Bay. Concomitantly extensive invertebrate and entomological collections were made on land and along shore in the vicinity of the lighthouse, in the swampy areas, on the far shore of the Bay, and at the northern end of the reef where it joins the mainland. The shoal waters of the south end of Cozumel Island, particularly about Punta Santa María, also were explored.

Members of the party flew to Mérida on April 24 to meet J. Bruce Bredin, sponsor of the expedition, and Ernest N. May, both of Wilmington, Del. Although Drs. Clarke and Bousfield had to leave the expedition at this point, the rest spent April 25 to 27 visiting the Maya ruins at Chichén Itzá, and on April 28 those at Uxmal, returning to Cozumel on April 30. They then departed for Georgetown, Grand Cayman, and after a limited period of collecting on this island, returned to Miami on May 7.

In the course of the six weeks' expedition 119 collecting stations were established, mostly in the marine littoral, and 15 plankton samples were made with tow and dipnet, the latter with the aid of a submerged electric light over the ship's side. Dr. Clarke at 20 different places collected insects, along with other terrestrial arthropods, and, on Cozumel, a number of bats. The number of marine invertebrates obtained may total 10,000. Many of these are small, some of even microscopic size. Over 500 specimens of fishes were caught, and in excess of 5,000 insects and terrestrial arthropods were preserved.

Scientifically, the present expedition may be counted as one of the more productive of the recent expeditions under the sponsorship of Mr. and Mrs. Bredin. The collections of the Smithsonian Institution have been greatly enhanced by this important collaboration.

Dr. David H. Johnson, curator of mammals, visited the California Academy of Sciences in San Francisco, June 13–14, to obtain data for the proposed dugong group in the new Hall of Oceanic Life of the Museum of Natural History. He also studied the collections of mammals in the Academy, finding significant specimens from Annam, Korea, and Manchuria bearing upon his research projects. Subsequently, Dr. Johnson attended the annual meeting of the American Society of Mammalogists in Tacoma, Wash., where he had an opportunity to review with colleagues the manuscript report on mammals collected on Ponape in connection with a project of the Pacific Science Board.

Dr. Henry W. Setzer, associate curator of mammals, spent the first few days of December at the American Museum of Natural History, where he familarized himself with some of the collections of the department of mammals. His particular interest was to make a survey and a study of African mammals, particularly those belonging to the genus *Acomys*.

Dr. Charles O. Handley, Jr., associate curator of mammals, made a brief trip to Fenwick Island, Del., to obtain for the National Museum a skull of a young male beaked whale, *Ziphius cavirostris*, a species rarely collected. Later in September he spent five days in Virginia near the mouth of the Rappahannock River, in order to augment the collection he made in this mammalogically little known area in May 1959. He collected approximately 70 mammals, many of which are significant in working out the relationships of the mammalian fauna of this isolated area, and some of which are rare in Coastal Plains collections.

During the first week of December Dr. Handley made a very productive study trip to the Academy of Natural Sciences at Philadelphia, the Museum of Comparative Zoology of Harvard University, and the American Museum of Natural History in New York, his objective being to compare recently acquired Panamanian specimens with types and other specimens in the respective museums. He was able to develop a large body of valuable notes, and it was discovered, surprisingly, that several of the species represented in the Panamanian collections are apparently undescribed.

Between January 12 and March 15, Dr. Handley, accompanied by D. I. Rhymer, of the taxidermy shop, continued his survey of the mammals of Panama, which is now in its fourth year. This work is being conducted in cooperation with the Gorgas Memorial

Laboratory. Collecting in Panama this year was entirely in the province of Bocas del Toro, on the Caribbean coast adjacent to Costa Rica, a region of heavy rainfall without a distinct dry season. Collections were made in the great swamps around Almirante and Boca del Drago and at a cattle ranch near Changuinola. One of of the bats obtained is the third known specimen of a species last collected in 1896, while another had previously been known only from southern Mexico and southeastern Brazil. Several of the marsupials and rodents appear to be undescribed subspecies, and at least two of the birds were second records for Panama.

From mid-March to mid-April Dr. Handley and Mr. Rhymer worked in Venezuela in cooperation with the Ministry of Agriculture of that country, with headquarters in the National Park of Rancho Grande in the coast range about 50 miles west of Caracas. They sampled the desert fauna along the Caribbean coast, the cloud forest on the mountaintops, and the arid savannas around Lake Valencia in the interior. Most of the species obtained in Venezuela have been poorly represented in the U.S. National Museum. Several of the bats and one of the mice have not previously been reported in Venezuela; one of the bats, although common locally, is the second known collection of the species, recently described from Panama. During the course of their work in Panama and Venezuela in 1960 Dr. Handley and his assistant collected and preserved more than 2,500 specimens of mammals, birds, reptiles, and amphibians, in addition to a number of invertebrates and a few fishes. This significant material includes several species new to the collections of the National Museum and many others representing extensions of known geographical ranges.

In his capacity as secretary of the American Ornithologists' Union, Herbert G. Deignan, associate curator of birds, attended the annual meeting at Regina, Saskatchewan, toward the end of August.

Dr. Leonard P. Schultz, curator of fishes, made a trip to Miami, Fla., and Bimini, Bahamas, July 6–11, for the purpose of locating molds and casts of large fishes for the proposed Hall of Oceanic Life. On October 30 he attended the dedication services for the new building of the Bingham Oceanographic Laboratory at Yale University and while there made extensive notes on fish specimens available for study, with special attention to sharks and various reef-fishes.

Between August 26 and September 5, Dr. William R. Taylor, associate curator of fishes, and Robert H. Kanazawa, museum aide, collected fishes in the Tennessee River and adjoining river systems in Virginia, Tennessee, Georgia, and Alabama, a particular desideratum being specimens of fishes of the genus *Noturus* needed for a revision by Dr. Taylor which is nearing completion. Important ecological and locality data also were obtained. Continuing their studies, the two made a similar collecting trip to the Neuse and Tar River systems of North Carolina, September 16–20. The species under particular consideration there was *Noturus furiosus*, of which nearly 100 specimens were obtained from three localities in the Tar River system, thus increasing the number of known specimens many times and adequately meeting the needs of the study in progress. These two expeditions resulted in the addition of about 8,500 specimens of fishes to the collections of the U.S. National Museum.

O. L. Cartwright, associate curator of insects, in December made a research trip to the Academy of Natural Sciences at Philadelphia comparing specimens and examining holotypes of four species of *Onthophagus*, a group of scarab beetles he is revising.

Dr. Ralph E. Crabill, Jr., associate curator of insects, continued his work on chilopods by studies at the Museum of Comparative Zoology, at Harvard University, July 20–25. He studied specimens housed in the collection, attempted to collect topotypes of an obscure species described from that area, and conferred with colleagues concerning biological and curatorial problems. With the aid of a National Science Foundation grant Dr. Crabill left Washington on March 28 for an extended study of centipedes and millipedes in European museums. He was accompanied by Dr. Richard L. Hoffman, research assistant, who is a specialist on millipedes.

Between September 26 and October 4, Charles E. Cutress, Jr., associate curator of marine invertebrates, traveled to Buxton and Beaufort, N.C., to examine collections of sea anemones at the Cape Hatteras and Duke Marine Laboratories and to collect and photograph sea anemones in both areas. Specimens and notes obtained made it possible to settle problems concerning the anemones of the area.

In continuation of studies on the Pacific marine fauna undertaken under a contract with the Atomic Energy Commission and the Office of Naval Research, Dr. Harald A. Rehder, curator of mollusks, studied collections in Cambridge, Mass. In studying the Pacific mollusks he is being assisted by Dr. Joseph Rosewater, research assistant. Studies were made in the Museum of Comparative Zoology; in particular, specimens of the Tellinidae from the Indo-Pacific area were critically examined and recorded in order to facilitate the preparation of a monograph on the members of this large family. Dr. Rehder also visited Salem, Mass., to confer with Dr. Donald Marshall, an ethnologist of the Peabody Museum, who during the course of his fieldwork has made extensive collections of mollusks in the Tuamotus that are of considerable interest to Dr. Rehder in connection with his Pacific studies. Dr. Rosewater examined approximately 270 lots of specimens of the molluscan family Pinnidae at the Museum of Comparative

Zoology and at the Academy of Natural Sciences of Philadelphia in furtherance of a monograph on the Indo-Pacific species of this family.

In mid-February Dr. Joseph P. E. Morrison, associate curator of mollusks, acted as one of the judges of the annual show of the St. Petersburg, Fla., Shell Club. The Smithsonian Institution offers an annual citation for the best exhibit in this display. Subsequently, he carried on some dredging operations in the upper end of Old Tampa Bay, and at Long Bayou he found living *Polymesoda* clams in the black muck under grass in the intertidal zone, where the local shell collectors had previously seen only dead shells.

The month prior to June 15 Dr. Morrison, accompanied by James Watson of the exhibits staff, spent at two southeastern localities photographing, sketching, and collecting specimens and materials for shore-line habitat groups for exhibit in the proposed Hall of Oceanic Life. Included were more than two weeks at the Gulf Coast Research Laboratory at Ocean Springs, Miss. On the return trip they visited the University of North Carolina Institute of Fisheries Research, at Morehead City, N. C., and gathered materials and specimens for the sand-beach shore-line group. The superb cooperation of the personnel concerned at both of these laboratories made possible the virtual completion of this complicated work in considerably shorter time than was originally planned and the gathering of additional scientific specimens of mollusks and other animals at various other localities. For example, previously unknown egg characters and new locality records of fresh-water mollusks were obtained from Virginia, Tennessee, and Georgia on the way south. Several species and genera were added to the known molluscan fauna of Mississippi, and topotype specimens of the brackish-water snail genus *Littoridinops* were obtained from near Darien, Ga.

From July 6 to August 7, 1959, Dr. G. A. Cooper, head curator of the department of geology, and Dr. Richard E. Grant, research assistant, conducted fieldwork in west Texas in furtherance of their studies of fossil brachiopods, a long-term project that is partially supported by a grant from the National Science Foundation. They made extended stays in the Glass Mountains, the Chinati Mountains, the Sierra Diablo, and the Carlsbad Caverns area. The expedition was a success in every way, and many fine blocks containing important fossil brachiopods were obtained that will yield much new information and permit the correction of possible errors in earlier records. In mid-June Dr. Cooper visited the American Museum of Natural History to study a large and valuable collection of fossil corals, some of which are being offered to the National Museum.

Between August 17 and September 10 Dr. George S. Switzer, curator of mineralogy and petrology, visited several institutions in Europe to examine their mineral collections and discuss future exchanges with staff members. Subsequently, he attended the first general assembly of the International Mineralogical Association in Zurich, where he represented the Mineralogical Society of America, and a meeting of the Museums Commission of the International Mineralogical Association. This highly successful international session was followed by a 4-day field excursion to classic mineral localities in the Swiss Alps. During the week following March 4 Dr. Switzer visited Dr. Mark C. Bandy, of Phoenix, Ariz., to examine a collection of several thousand mineral specimens comprising an exceptionally valuable study set of South American minerals, especially from the tin mines at Llallague, Bolivia.

In September E. P. Henderson, associate curator of mineralogy and petrology, accompanied by Grover C. Moreland, physical science aide, visited the Battelle Memorial Institute in Columbus, Ohio, to study the techniques developed there for polishing metals, ores, and meteorites. Mr. Henderson also examined specimens of the New Concord meteorite in the Ohio State University Museum and some of the Hopewell material in the Museum of Archeology. In connection with the annual meetings of the Geological Society of America in Pittsburgh, November 1–12, he visited the Mellon Institute and discussed exchanges of meteorites and tektites with staff members. Subsequently, he discussed problems pertaining to meteorites with staff members of the Chicago Natural History Museum and the University of Chicago.

Long interested in the study of tektites, Mr. Henderson has been attempting for some years to acquire a representative collection of these interesting extraterrestrial objects for the Smithsonian Institution. One of the principal collectors has been Dr. H. Otley Beyers, of Manila, who has perhaps the largest privately owned tektite collection in the world. Aided by a grant from the National Science Foundation, Mr. Henderson left Washington late in January to select from this collection, with Mr. Beyers's cooperation, representative material for the Smithsonian. He spent nearly two months in Manila at this task, and as a result approximately 10,000 specimens will come to the Institution as a donation by Dr. Beyers. These very valuable specimens will greatly augment the material available in the United States for study by specialists. After completion of his work in the Philippines, Mr. Henderson visited 15 institutions in Viet Nam, Thailand, Burma, India, Russia, Austria, Switzerland, Germany, France, and England, becoming acquainted with specialists on meteorites and tektites and making preliminary arrangements concerning exchanges between the Smithsonian Institution and these various other museums.

In mid-November Paul E. Desautels, associate curator of mineralogy and petrology, visited Rochester, N.Y., to select specimen materials for the national collections. At the request of the Rochester Academy of Sciences he gave a talk at the Rochester Museum of Arts and Sciences entitled "Crystal Growth and Its Aberrations in Mineral Crystals."

In June he went to the southern Illinois-Kentucky fluorspar mining district, in the hope that certain deficiences in the museum collections could be eliminated. The trip proved very successful, resulting in the acquisition of about 1,000 pounds of top-quality mineral specimens of fluorite, calcite, barite, galena, and quartz.

On June 1 Dr. Richard S. Boardman, associate curator of invertebrate paleontology and paleobotany, left for an extended visit to Europe to facilitate his studies of fossil Bryozoa of the United States and their correlation with European faunas. This research is partially supported by a grant from the National Science Foundation. Dr. Boardman's objectives are to collect Ordovician fossils, mainly Bryozoa, and to visit museums and universities in Great Britain, France, Belgium, Germany, and other continental countries.

Dr. Porter M. Kier, associate curator of invertebrate paleontology and paleobotany, spent the period October 11–16 collecting fossil echinoids on the Chattahoochee River and its tributaries in Georgia, accompanied by Dr. Norman Sohl, of the U.S. Geological Survey. The geologists visited all the known echinoid localities in the area and acquired many excellent specimens for the collections of the National Museum. In November and in March Dr. Kier visited the Academy of Natural Sciences in Philadelphia and the Museum of Comparative Zoology at Harvard University to study the fossil and recent echinoid collections of those institutions. Many specimens were seen, and some were borrowed in aid of his work on the Cassiduloida, an order of sea-urchins. On June 6 he departed for a brief European trip, during which he intends to examine collections of fossil echinoids in the museums at Paris and Liège. This study, which is part of a project supported by the National Science Foundation, is to aid in the preparation of a monograph on the Cassiduloida.

Dr. Richard Cifelli, associate curator of invertebrate paleontology and paleobotany, joined a group of biologists from the Woods Hole Oceanographic Institution in marine studies from August 5 to 19. After preliminary work at Woods Hole, Mass., the group went to Bermuda, whence, aboard the oceanographic vessel *R. V. Chain*, they sailed on a more or less direct line to Woods Hole, stopping at 15 stations along the way. They made hydrographic observations and took

200-meter oblique plankton tows at each station. Also at each of the stations they took a separate tow for pelagic Foraminifera, using a specially designed ½-meter net with a guard at the forward end. This is a particularly interesting traverse because it crosses diverse water masses, including the Sargasso Sea, the Gulf Stream, the North Atlantic Slope Waters, and the Eastern North Atlantic Coastal Waters. Each water mass appears to be characterized by a distinctive assemblage of Foraminifera. From this and further scheduled trips Dr. Cifelli expects to gather more data on the distribution of North Atlantic pelagic Foraminifera and on factors responsible for their distribution.

During the first half of June Dr. Cifelli, accompanied by several members of the U.S. Geological Survey and the Canadian Geological Survey, visited several western States to examine important marine Jurassic sections. The party studied the Jurassic stratigraphy at sites in Wyoming, Montana, and Idaho. Dr. Cifelli collected 130 foraminiferal samples from the shales in the Jurassic formation.

Henry B. Roberts, museum aide, in mid-January visited the Academy of Natural Sciences at Philadelphia to study various primary types of fossil decapods and barnacles. The Academy's collections in these fields contain important historical material particularly useful to Mr. Roberts in his researches.

Dr. C. Lewis Gazin, curator of vertebrate paleontology, accompanied by Franklin L. Pearce, exhibits specialist, devoted about a month early in the year collecting fossil vertebrates in southwestern Wyoming and adjacent Utah. Dr. Gazin traced the Sage Creek White Layer, which marks the boundary between the upper and lower Bridger formation from the type section of Cottonwood Creek around the basin to its most easterly point on Twin Buttes. This study has considerable significance in properly correlating many of the collections made from various localities in earlier years and correcting errors on a map prepared by Matthew and Granger about 50 years ago. Collecting was largely concentrated in the lower or Bridger "B" levels on both sides of the basin, but localities visited outside the areal extent of the Bridger formation included a lowermost Eocene fossil occurrence just south of Bitter Creek Station on the Union Pacific Railroad, a previously very productive locality for lower Eocene mammals, about 12 miles north of Big Piney, Wyo., and a series of nearly barren upper Eocene exposures in Norwood Canyon, Morgan County, Utah.

After the completion of his fieldwork, Dr. Gazin studied fossil primates at the Los Angeles County Museum. Later, September 10–12, in Salt Lake City, he participated in the annual field conference of the Intermountain Association of Petroleum Geologists. Between

December 6 and 13 he visited research collections at Princeton University and the American Museum of Natural History to study Eocene creodonts, primates, and rodents. In both institutions he found many valuable specimens bearing upon his current studies, and paleontological problems were discussed in detail with various staff members. In mid-April Dr. Gazin began an extended tour of various European countries to carry on both museum research and fieldwork. Beginning in France and Switzerland, he will continue this work in Germany, Austria, Denmark, Belgium, and England, the primary purpose of the project being to study early Tertiary mammalian collections and to visit the more important classical localities for early fossil mammals. It is part of a long-term research project on the early Tertiary mammals of North America, which is partially supported by a grant from the National Science Foundation.

Late in May Dr. David H. Dunkle, associate curator of vertebrate paleontology, spent a week first at the Carnegie Museum in Pittsburgh studying examples of Mesozoic fishes from Europe, especially amioids and oligopleurids, and then at the Cleveland Museum of Natural History consulting staff members on the reconstruction of dinosaur skeletons in their new hall with a view to obtaining information of use in the renovation of halls in our Museum of Natural History.

Dr. Nicholas Hotton III, associate curator of vertebrate paleontology, spent the last week of October examining deposits of Dunkard (Permo-Carboniferous) age in Belmont County, Ohio, for vertebrate remains. The outcrops visited were those used by members of the U.S. Geological Survey in stratigraphic studies of Monongahela and Dunkard rocks of that county. He collected vertebrates from 15 localities from which material had not been previously obtained. Dunkard outcrops in western West Virginia and more northerly exposures of the Dunkard in Ohio and Pennsylvania were also studied. Subsequently, Dr. Hotton spent some time at the Carnegie Museum, in Pittsburgh, examining collections of Dunkard material, and attending the annual meetings of the Society of Vertebrate Paleontology and the Geological Society of America. In connection with the planned renovation of the Dinosaur Hall in the Museum of Natural History, Dr. Hotton spent about 10 days in November visiting comparable presentations in the American Museum of Natural History, the Yale Peabody Museum in New Haven, the Cleveland Museum of Natural History, and the Chicago Natural History Museum. The arrangement of dinosaur skeletons and certain lighting effects achieved at these institutions provided him with useful background information for planning the Smithsonian's new exhibits. During the last week of March Dr. Hotton worked at the Museum of Comparative Zoology at Harvard University, examining and making sketches of specimens of primitive members of the reptilian order Captorhinomorpha, in connection with his research on the nature and origin of the reptilian middle ear. The skulls inspected display important morphological detail which has not yet been recorded.

For a month and a half just before the end of the fiscal year, Dr. Hotton, accompanied by John D. Gassaway, museum aide, collected in the Permian areas of Kansas, Oklahoma, and Texas. They explored outcrops of the Speiser formation for vertebrate fossils from Riley County to Cowley County, Kans., and obtained a good collection of little-known amphibians, including the greater part of an excellently preserved articulated skeleton of *Acroplous.* Most of the well-known localities in Texas appear to have been overcollected, but nevertheless some interesting blocks containing bones of many small animals were obtained in new localities or less promising areas around the better-known ones. A marked difference between the Kansas and Texas deposits was noted, although they are roughly of the same age.

Exhibits Specialist Franklin L. Pearce spent ten days in June at the Cleveland Museum of Natural History, the University of Michigan Museums, and the Chicago Natural History Museum, primarily to observe their methods of preparation of fossils and the use of new plastic and metallic materials in the field of vertebrate paleontology. Some of the new techniques utilized in these museums hold promise for use in the restoration procedures already in progress at the Smithsonian.

The Director of the Museum of History and Technology, Frank A. Taylor, spent two days in New York in July at the American Museum of Natural History and the Metropolitan Museum of Art investigating details of exhibition techniques. He examined reproductions of early European mechanical calculators and met the craftsmen who are building the model of the da Vinci coining press for the Smithsonian.

Dr. Robert P. Multhauf, head curator of science and technology, made trips during the year to several of the eastern States, visiting museums, other institutions, and individuals to examine scientific apparatus and antique instruments of possible interest to the Smithsonian study and exhibits programs.

In order to accelerate the enlargement of exhibit and study materials of the division of mechanical and civil engineering, Eugene S. Ferguson, curator, visited a number of institutions and individuals throughout the eastern United States. Especially at Winterthur, Del., Philadelphia, and various localities in New England, he acquired information about specific machines and tools of potential use in planning various new Smithsonian exhibits. In June he attended the 68th annual meeting of the American Society for Engineering Education at Purdue University and presented a paper on "Kinematics of Mechanisms from the Time of Watt."

In connection with planned halls in the new Museum of History and Technology, Edwin A. Battison, associate curator of mechanical and civil engineering, visited various watch factories, collections, and individuals throughout the northeastern States. He examined many chronometers and watches as well as certain historical instruments with a view to acquiring material and information for the Institution.

During the year Robert M. Vogel, assistant curator of mechanical and civil engineering, made several trips throughout the northeastern States in connection with the exhibits in the new Smithsonian Hall of Engineering. He examined a large quantity of mechanical equipment including elevators, engines, railroads and other means of transportation and made many contacts with interested individuals and developed plans for the acquisition of desired specimens for the new hall.

In the continuing development of a program for the construction of models for the new Museum of History and Technology, Howard I. Chapelle, curator of transportation, spent May 16–24 visiting individuals and model manufacturers throughout the northeastern States. Included were such public organizations as the Museum of the City of New York and the New Bedford Whaling Museum, where he inspected builders' models of ships.

John H. White, Jr., assistant curator of transportation, made trips to several eastern States where he visited institutions, libraries, and individuals to examine historic locomotives and models and other railroad equipment, as well as catalogs and documents.

During the year W. James King, Jr., acting curator of electricity, visited various museums and libraries throughout the eastern States, primarily in connection with Smithsonian study collections and the proposed new Hall of Electricity. He studied collections in telephone communications, the various aspects of telegraphy and electronic equipment, and the history of electrical technology and engineering.

Dr. John B. Blake, curator of medical sciences, made several short trips to examine historic medical instruments and X-ray apparatus with a view to enlarging and improving the Smithsonian collections in this field. Between March 30 and May 15, he visited numerous museums, universities, and other institutions in Great Britain, Holland, France, Switzerland, Italy, Germany, Denmark, and Sweden, principally those containing objects pertaining to medical history. The historical medical museums in London, especially the Wellcome Historical Medical Museum, and in Zurich, Rome, Copenhagen, and

Stockholm were particularly outstanding. He also furthered his research in dental history in the study collections of these museums.

Early in December Dr. Sami K. Hamarneh, associate curator of medical sciences, visited the Firestone Library at Princeton University, the College of Pharmacy and Science in Philadelphia, and the chemistry department of the University of Pennsylvania to study Arabic manuscripts pertaining to health arts, to consult oriental published works contained in these various libraries, and to examine pharmaceutical antiques housed there.

Dr. Philip W. Bishop, head curator of arts and manufactures, spent two days in West Virginia in November inspecting certain early oil-pumping equipment. He made a number of contacts with oil- and gas-well owners which may lead to further acquisitions for the exhibits of the Museum of History and Technology.

In November Miss Grace L. Rogers, acting curator of textiles, spent three days in New York City visiting various textile establishments. She also visited the Fabien Printing Co. in Lodi, N.J., where with expert guidance she examined in detail the various steps in both the screen-printing and roller-printing processes. In May she attended the first International Textile Machinery Exhibition sponsored by the American Textile Machinery Association, at Atlantic City, N.J., where exhibits from 11 foreign countries and the United States were on display that incorporated new ideas in textile machinery.

Several trips to museums and other institutions and individuals were made during the year by Paul V. Gardner, acting curator of ceramics and glass, for the purpose of acquiring materials for Smithsonian exhibits. These included visits to the Corning Museum of Glass, the Syracuse Museum of Fine Arts, the New Haven Colony Historical Society, and the New Historical Society.

Jacob Kainen, curator of graphic arts, spent five days in September in Minneapolis checking data on John Baptist Jackson and Hendrick Goltzius, particularly at the Minneapolis Public Library, the Minneapolis Art Institute, and the Walker Art Institute. In December he visited various museums and libraries in Richmond, Va., and Raleigh, N.C., in pursuance of the same research projects pertaining to these artists.

In April, Fuller O. Griffith, 3d, assistant curator of graphic arts, studied a collection of Hassam lithographs in the Detroit Institute of Arts. He found several unique examples of Hassam's work that were of great interest and value in furthering his research on this artist.

Charles O. Houston, Jr., associate curator of industrial cooperation, made two trips to Pittsburgh during the year to visit the

Bureau of Mines, the Carnegie Library and Museum, and other institutions to study references on mine technology and coal-cutting machinery. An examination of operations connected with the preparation and shipment of various kinds of coal at the Mathies Mine on the Monongahela River was useful to Mr. Houston in his preparation of plans for the new Smithsonian Hall of Coal.

At a meeting of the Agricultural History Society at Louisville, Ky., E. C. Kendall, associate curator of agriculture and wood products, discussed the acquisition of various farm implements to supplement such collections in the Museum of History and Technology and gave a paper on 18th-century American plows and their European origins.

Dr. Anthony N. B. Garvan, head curator of civil history, made several trips in connection with the preparation of a new hall, The Growth of the United States. Among the institutions visited, and from which valuable information and suggestions were obtained, were the Hispanic Society of America in New York, the Academy of Natural Sciences of Philadelphia, and the Ford Museum in Dearborn, Mich. In May Dr. Garvan attended a meeting of the Board of the Human Relations Area File in New Haven. The Smithsonian Institution has recently acquired a set of these valuable files and has been elected to membership. This research material will be of value to members of the Smithsonian staff and to other scientists in the Washington area.

Dr. Wilcomb E. Washburn, curator of political history, visited several eastern museums and other institutions in continuance of his studies of political Americana and to review exhibit techniques in use elsewhere. At several historical houses he examined collections referring to American historical figures, including William Henry Harrison, Henry Clay, Abraham Lincoln, William Seward, and Franklin D. Roosevelt.

During several trips to various parts of the eastern States, C. Malcolm Watkins, acting curator of cultural history, examined many collections in connection with the proposed halls of the Museum of History and Technology. In the Virginia State Library, in Richmond, and in the Archives of Colonial Williamsburg, he continued his research on the Marlborough site.

John D. Shortridge, associate curator of cultural history, attended the sessions of the American Musicological Society in Chicago late in December. He visited the Chicago Art Institute and the Newberry Library, to examine harpsichords and other musical instruments of historical interest.

Rodris C. Roth, associate curator of cultural history, went to New York and New England in November to study period rooms and decorative arts collections in various museums and galleries. Her research involves studies in visual materials, such as painting and prints related to American and English interior decoration of domestic dwellings in the 17th, 18th, and 19th centuries. Her studies outside of Washington have enabled her to advance projects on furnishings and exhibits for a Smithsonian hall of Every Day Life in the American Past.

John N. Pearce, assistant curator of cultural history, visited Wilmington, Del., and New York City in April and May to carry out research on the Meeks family, cabinetmakers in New York in the 18th and 19th centuries.

George T. Turner, acting curator of philately and postal history, accompanied by Francis J. McCall, associate curator, attended the 11th annual American Stamp Dealers' Show in New York, November 18–22. A 12-frame display prepared by the division of philately and postal history was exhibited and aroused much interest. Mr. McCall, while in Boston in September, continued research on the establishment of a post office in the Colony of New England; he also examined Hawaiian missionary correspondence of the period 1820–50 in the Houghton Library of Harvard University, in connection with his research on this subject.

In preparation for new exhibits for the Museum of History and Technology, Dr. Vladimir Clain-Stefanelli, acting curator of numismatics, journeyed to New York, Omaha, and Chicago to discuss numismatic problems with various specialists and to examine laboratory and exhibit techniques being used by different institutions. Mrs. Elvira Clain-Stefanelli, associate curator of numismatics, has carried on her bibliographical research on Greek metrology.

Mendel L. Peterson, head curator of Armed Forces history, spent the first half of July in Havana, Cuba, and Port Royal, Jamaica. In Havana he examined several Spanish bronze cannons in Cabana Fortress in connection with his study of the marking and decoration of early artillery. In Jamaica he joined the underwater explorations operating from the *Sea Diver II.* United States Navy divers had been working there for some weeks, devoting most of their time to removing silt and coral overburden from the site. The material recovered led to a probable conclusion that this might have been the site of a cookhouse of the type known to have been used in Port Royal. On a subsequent trip to Jamaica, between July 27 and August 11, Mr. Peterson rejoined the expedition, which by that time had begun to recover a large number of objects from the site behind Fort James. It is believed that Port Royal is the richest 17th-century site in the Western Hemisphere. Several years of hard digging will be required to exploit it completely. The research sponsored by Edwin A. Link and the National Geographic Society in this particular area, in which

Mr. Peterson has participated, is certain to cast valuable light on the Colonial period of Jamaica.

Edgar M. Howell, acting curator of military history, visited Sackets Harbor, N.Y., September 13–18, to explore the site of two War of 1812 forts. The excavations produced results far exceeding expectations. Mr. Howell continued the preparation of an article on the career of Harvey Dunn, official combat artist of World War I, and a catalog of his war paintings. Early in December he visited New York and vicinity to interview members of the Dunn family and several of the artist's contemporaries.

Philip K. Lundeberg, associate curator of naval history, made a tour of maritime and naval museums on the northeast coast of the United States, September 21–October 4, and obtained much information that will be of use in preparing the new exhibits in the Museum of History and Technology of the Smithsonian.

EXHIBITIONS

Modernization of several exhibition halls was continued in 1960. Two completely renovated halls illustrating "The World of Mammals" were opened to the public on November 23, 1959. Biological principles, such as how mammals vary geographically, how they adapt to different climates and environment, the various structural adaptations for locomotion, how they obtain their food and defend themselves, are illustrated. Selected groupings of kinds of mammals, such as cats, dogs, bears, pigs, and primates, are displayed separately. Habitat groups show, among others, African buffalo, square-lipped rhinoceroses, lions, zebras, armadillos, proboscis monkeys, and orangutans in natural surroundings. Many of the large African mammals in these halls were collected by President Theodore Roosevelt during his African expedition of 1909–10, sponsored by the Smithsonian Institution. These exhibits were planned by Dr. Henry W. Setzer, associate curator of mammals. Architectural design was by Thomas Baker, who also supervised the preparation and installation of the exhibits. Robert C. Hogue painted the backgrounds of the habitat groups, and Watson Perrygo supervised the taxidermy work and preparation of accessories. The mural was painted by Art Smith.

Planning for "Oceanic Life," which will occupy the large west main hall, advanced during the year, and progress was made on the construction of a replica of a 92-foot blue whale, which will represent the largest living form of animal life. Chris Karras designed the layout of this hall. The contract for the construction of the display fixtures was awarded in June 1960.

On June 30, 1960, the first comprehensive review of fossil fishes and amphibians in the U.S. National Museum of the Smithsonian Institution was presented to the public. The history and development of these geologically old back-boned animals are traced through millions of years. Transition from life in the water to life on land and the development of jaws are illustrated by diagrams and models. A 14-foot skeleton of the predatory Cretaceous fish *Xiphactinus*, which had swallowed another sizable fish, the dermal-armored giant Devonian joint-necked fish *Dinichthys*, a series of fishes which had inhabited the seas covering Germany during the Jurassic period, and a rock slab with the crowded skulls and bones of the amphibian *Buettneria* which had been trapped in an evaporating Triassic swamp within the boundaries of the present state of New Mexico are displayed in this hall. This exhibit hall was supervised by Dr. David H. Dunkle, associate curator of vertebrate palentology, and the exhibits design was coordinated by Gorman Bond.

The most colorful habitat groups for the hall of invertebrate paleontology and paleobotany were completed by George Marchand of Ann Arbor, Mich. A giant cephalopod shell, *Parapuzosia*, which was received in many pieces, was restored for a display unit. Scripts for the paleobotanical displays in this hall were prepared by Dr. Erling Dorf of Princeton University. Dr. Gustav A. Cooper, head curator of geology, was responsible for the preparation of the scripts for the remainder of this hall.

Construction of the display units in the hall for the fossil mammals illustrating the "Age of Mammals" was completed and installation commenced. The large fossil mammal skeletons were in place by the end of the year. This hall was designed by Ann Karras in accordance with the script furnished by Dr. C. Lewis Gazin, curator of vertebrate paleontology. Included among the mammals added to the previous exhibit series are skeletons of two horses, *Orohippus* and *Parahippus*, the Oligocene camel *Poebrotherium*, a composite restoration of the Eocene primate *Smilodectes*, and a large primitive rodent, *Ischyrotomos*.

Preparation of specimens for the dinosaur display in the large east main hall was begun near the end of the year. Among these were the skeleton of the Triassic reptile *Trilophosaurus*, remounting the skeleton of the Permian sail lizard *Dimetrodon* and restoring the elongated tail, and restoration of a phytosaur skull from the Triassic rocks of west Texas. Tentative layouts for modernization of the dinosaur hall were developed by Dr. Nicholas Hotton III, associate curator, and exhibits designer Ann Karras.

Preparation of exhibits for the first of two modernized halls of North American archeology was initiated and 17 cases were installed. Among these were topical exhibits on aboriginal North American uses of tobacco, agriculture and food crops, methods of shaping stone, and historic metal trade goods, as well as interpretations of prehistoric Indian cultures of Alaska, California, and the southwestern United States. The exhibits were designed by Terrell Bridges. Contract construction in the second of two halls of North Amerian archeology was completed in June 1960. Dr. Waldo R. Wedel, curator of archeology, is responsible for the scientific planning of all exhibits in both of these halls.

Curator of ethnology Saul H. Riesenberg and Associate Curator Eugene I. Knez cooperated with Dorothy Guthrie of the exhibits staff in the development of the architectural layout for the "People of the Pacific" exhibit, which will interpret the material culture of Oceania and southeast Asia. Associate Curators Knez and Gordon C. Gibson also consulted with Mrs. Guthrie in developing a tentative layout of exhibits in an adjoining hall which will be devoted to African and eastern and central Asiatic peoples.

Script for the hall of physics, astronomy, and mathematics was completed by Dr. Robert P. Multhauf, head curator of science and technology, with the assistance of Consultants Peter Diamadopoulos and Julian H. Bigelow. The unit designs were developed by Benjamin W. Lawless. In August 1959 one of the exhibits for this hall, a full-scale replica of the shop and tools of Henry Fitz, this country's first commercial telescope-maker, was installed in the Arts and Industries Building. Special exhibitions presented by the division of physical sciences during the past year were the first cash register, a gift of the National Cash Register Co., the development of the pyrometer (commemorating the inventions of Edward Brown), a loan display of machinery used in compiling the United States census, an exhibit of American surveying instruments, and a series of astrolabes received from the International Business Machines Corporation.

Curator Eugene S. Ferguson supervised the trial erection of a pre-Civil War machine shop and the restoration of machine tools which will be shown in this shop in the Museum of History and Technology. Associate Curator Edwin A. Battison supervised the erection of a clockmaker's shop which will be a featured exhibit in the hall of light machinery.

Curator Howard I. Chapelle, with the assistance of William Geoghegan, drafted drawings and specifications for the construction of 18 models of historic ship types not represented in the Museum's collections, and continued to supervise the repair and restoration of models in the watercraft collection.

The major portion of the hall of electricity script has been completed by Acting Curator W. James King, Jr., aided by consultants

Robert A. Chipman and Guenter Schwarz. A diorama depicting the broadcast of a program from the studio of pioneer radio station KDKA in Pittsburgh was also completed during the year.

Throughout the year attention was devoted to the development of exhibits of medical and pharmaceutical history which were designed by Ronald Elbert and Fred Craig from specifications furnished by Dr. John Blake and Dr. Sami Hamarneh, curator and associate curator, respectively, of medical sciences.

On February 18, 1960, the new farm machinery hall in the southeast court of the Arts and Industries Building was formally opened. The exhibits illustrate the progressive mechanization of farm work since the early part of the 19th century. Actual machines supplemented by accurate models record the development of these labor-saving devices. Associate Curator Edward C. Kendall was responsible for the planning of this hall and the exhibits were designed by Ronald Elbert.

On December 9, 1959, the section of the textile hall gallery, tracing the history of the development of the sewing machine, was opened to the public. Seven cases show the first United States patents, the development of a practical machine, commercial treadle and hand machines of the 1850's to 1870's, unusual sewing-machine patents of the period, and early sewing-machine attachments for special purposes. A section of this gallery was opened on May 17, 1960, for the display of printing and dyeing techniques from the early painted-cotton fabrics of India through the tie-dyeing, batik, block printing, copperplate printing, roller printing, stenciling, and silk-screen printing.

Theodore A. Randall, professor of ceramics of the New York State University, served as consultant to Acting Curator Paul V. Gardner in planning the hall of ceramics and glass. The Seventh International Exhibition of Ceramic Art was held from August 21 to September 23, 1959, in the foyer of the Natural History building. Foreign ceramics selected and lent by the embassies of the 19 countries represented supplemented ceramics made by American artists of national or international reputation, and pieces exhibited by local artists.

In May 1960 production was completed on the panel exhibits for the second of two large sections of the hall of graphic arts illustrating the history and development of photochemical printing. These exhibits, designed by Harry Hart from scripts written by Assistant Curator Fuller O. Griffith, 3d, will be stored until the Museum of History and Technology building is completed.

Installation of exhibits in the petroleum hall of the Arts and Industries Building was nearing completion at the end of the year.

Scripts for this hall were prepared by Dr. Philip W. Bishop, head curator of arts and manufactures. Associate Curator Charles O. Houston assumed responsibility for the hall of coal. John D. Morrow, formerly president of the Pittsburgh Coal Co. and the Joy Manufacturing Co., is serving as consultant. The planning of the hall of iron and steel continued with the help of consultant Lowell L. Henkel of the Industrial College of the Armed Forces. Dr. Clyde L. Cowan and William C. Cleveland continued in their consultative capacities in nuclear energy and general manufacturing, respectively.

Dr. Anthony N. B. Garvan, head curator of civil history, assisted by Peter C. Welsh, associate curator, and Arlene Krimgold, junior curator, continued the planning for the series of halls which will interpret the growth of the United States. Dr. Wilcomb E. Washburn, curator of political history, with the assistance of Robert Widder, exhibits designer, completed the design for the units of this division. Production of exhibits for the hall of American costume, which was planned by Assistant Curator Anne W. Murray and designed by Judith Borgogni and Virginia Kneitel, was well advanced at the close of the year. Repair and reconditioning of period interiors for the George Washington drawingroom and bedroom were in progress.

On January 3, 1960, a special showing of women's-rights material was prepared for the delegates to the national convention of the National Woman's Party, held in Washington, D.C. During June 1960 a colorful display entitled "America Votes" was presented in the west hall of the Arts and Industries Building. This featured an outstanding collection of banners, tokens, lanterns, and other paraphernalia relating to national political campaigns presented by Ralph E. Becker, and political caricatures and cartoons from the Harry T. Peters collection of American lithography.

A special exhibition of Spanish-colonial silver, principally from Ecuador, was installed in the lobby of the Natural History Building. The silver was collected early in this century by Daniel C. Stapleton and lent by his daughter, Mrs. George W. Renchard of Washington.

In May 1960 two special exhibitions were placed on display in the coin hall by the division of numismatics. Louis Eliasberg of Baltimore lent his entire collection of United States coins, including the specially designed exhibit cases and featuring an outstanding series of Latin American coins and foreign gold, as well as primitive media of exchange. A selection from the Willis H. du Pont gift of Russian coins and medals, formerly owned by the Grand Duke George Mikhailovich of Russia, was displayed in another exhibition illustrating the life and military exploits of Peter the Great.

A number of special exhibitions were shown by the division of philately during the year, including one of patriotic covers commemorating the approaching Civil War Centennial observances and another featuring the "Liberty for All" theme used in New York for the National Postage Stamp Show.

Considerable improvement in existing exhibits was made by Head Curator Mendel L. Peterson and Acting Curator Edgar M. Howell by clearing the area in front of the Star Spangled Banner and installing Naval and Marine Corps uniforms on the west gallery. Models of the dirigible *Akron*, the aircraft carrier *Shangri-La*, and the armored cruiser *Pennsylvania* were installed in the hall of naval history. From November 20 through December 31, 1959, a special exhibition of the recently acquired and unique W. Stokes Kirk collection of United States military insignia and accouterments was held in the rotunda of the Arts and Industries Building. During January and February 1960 the division of naval history presented in the rotunda of the Arts and Industries Building the "Evolution of U.S. Naval Aviation," which included carrier and aircraft models, selected combat paintings, photographs and significant objects ranging from Eugen Ely's aircraft propeller to a group of current air-to-air missiles.

Under the chairmanship of Dr. Herbert Friedmann, head curator of zoology, the committee coordinating and supervising the modernization of exhibits in the Natural History Building made a critical review of this program. The exhibits program of the Museum of History and Technology, being coordinated by John C. Ewers, assistant director, is concerned primarily with the development of exhibits for the new building. In fields represented by limited museum collections, the assembling of specimens has been an essential prelude to the completion of exhibit plans. John E. Anglim continued in charge of exhibition-hall design and the preparation of exhibits for the entire museum. Benjamin W. Lawless, with the assistance of Robert Widder in design, Bela S. Bory in production, and Robert Klinger in the model shop, supervised the exhibits work for the Museum of History and Technology. Rolland O. Hower, assisted by Thomas Baker and Peter DeAnna, supervised the renovation of the exhibition halls in the Museum of Natural History. Continued assistance in the design of renovated halls in existing buildings was given by Richard S. Johnson, design branch chief, and John H. Morrissey, architectural branch chief of the architectural and structural division of the Public Buildings Service, General Services Administration, and Luther Flouton, Henry R. Kerr, and Charles J. Nora, design architects of that agency. As lighting consultant, Carroll Lusk, museum lighting specialist of Syracuse, N.Y., provided the needed assistance to designers of exhibition halls for the Museum of History and Technology.

DOCENT SERVICE

The Junior League of Washington continued its volunteer program of conducting guided tours in modernized Smithsonian exhibition halls for school children of the Greater Washington area, under the supervision of G. Carroll Lindsay, curator of the Smithsonian Museum Service, working with Mrs. Clark Gearhart, chairman of the Smithsonian Volunteer Docent Committee of the Junior League of Washington, and Mrs. Dean Cowie, cochairman. At the conclusion of the tour season, Mrs. Gearhart was succeeded as chairman by her cochairman, Mrs. Cowie. Mrs. E. Tillman Stirling will serve as cochairman of the Docent Committee for the forthcoming year.

During the 1959-60 season, tours were conducted as before in the Halls of Power, Indians and the Eskimo, and Everyday Life in Early America. In addition, two more modernized exhibits were included—the Hall of Gems and Minerals and the Hall of Textiles.

During the 6-month season from October 1959 to May 1960, 525 tours were conducted, in which 15,658 children participated, representing an increase of 3,662 over the previous year.

For the first time tours were made available to junior high school science students. These included, for this group as well as for elementary school children, the Hall of Gems and Minerals and the Hall of Power.

In addition to Mrs. Gearhart and Mrs. Cowie, the members of the Docent Committee were: Mrs. George Armstrong, Mrs. Harrison Brand III, Mrs. Walter A. Edwards, Mrs. William R. Ford, Mrs. George Gerber, Mrs. William Graves, Mrs. Frederick Irving, Mrs. Edward Lamont, Mrs. Robert Larsen, Mrs. Ralph W. Lee III, Mrs. John T. Malone, Mrs. William Minshall, Jr., Mrs. Minot Mulligan, Mrs. George Pendleton, Mrs. James T. Rasbury, Mrs. Robert Rogers, Mrs. John Schoenfeld, Mrs. W. James Sears, Mrs. John Simmons, Mrs. William D. Sloan, Mrs. James H. Stallings, Mrs. G. G. Thomas, Mrs. E. Tillman Stirling, Mrs. David Toll, Mrs. Richard Wallis, and Mrs. Marc A. White.

BUILDINGS AND EQUIPMENT

In the act of May 13, 1960 (P. L. 86–455) Congress appropriated funds for the construction of an east wing and the air-conditioning of the existing Natural History Building of the Smithsonian. The added space will provide laboratories and workrooms for the scientific staff, more adequate storage space, and the desired climatic control for the preservation of the national collections of anthropology, the natural sciences, and art. Improved facilities for the convenience of the visiting public will also be afforded by this construction. Mills, Petticord & Mills, of Washington, D.C., are the architects, and the contract for construction will be supervised by the General Services Administration.

The principal contracts for the construction of the Museum of History and Technology Building, were awarded September 16, 1959, and work actually commenced October 5. The contracts were awarded to the Norair Engineering Corporation, Washington, D.C., for construction of the building. The elevators and escalators will be installed by the Otis Elevator Co. Within the plan of the building's structure, which was carefully reviewed and adopted by the Joint Congressional Committee on Construction and subsequently approved by the Commission of Fine Arts, the Smithsonian Institution's staff has developed designs for exhibits for approximately 38 major areas of historical and technological displays. Workrooms for the curatorial staff will be located adjacent to the storage areas for the reserve and study collections of cataloged objects, which provide basic data for interested visitors, students, and professional workers. Laboratories for the preservation and scientific study of materials of historical significance, and shops for exhibit construction and maintenance are included in the plans. The design architects, McKim, Mead & White, advised the Smithsonian Institution during the year on details of construction.

Modern-type seating was installed in the auditorium of the Natural History Building to provide more effective use of this hall. Improvement in the aisle lighting in the auditorium also was accomplished, with visitors' safety in mind.

Two metal buildings erected in the west court of the Natural History Building have provided working space for the exhibits staff as well as production facilities. Recent improvements include the construction of an extension on the west side of one building for housing the taxidermy section and a covered storage area along the east side of the other building to furnish protection to the Northwest Indian wooden boats stored by the division of ethnology. Remodeling of the exhibits laboratory includes a partial second-floor level, design office, general office, two dark rooms, paint spray room, sanding room, paint storage room, restoration room, enlarged cabinet shop, and general work area. Lighting installations, installation of ventilating equipment, plumbing and heating revisions, electric service modifications, and related work are also provided.

Increasing needs for working space made the proper utilization of available areas imperative. Useful space was gained by the construction of second-floor levels in five rooms on the ground floor of the Natural History building.

All marble surfaces of the north entrance lobby and vestibule of the Natural History Building were renovated, the bronze surfaces scoured and coated to retard deterioration, the exterior grille doors removed, the center revolving door removed and the original bronze doors rehung, and the ceilings and walls repainted.

A public rest area with shade trees, shrubs, sidewalks, curbs, fences and permanent-type benches has been constructed along the north side of the Arts and Industries Building.

CHANGES IN ORGANIZATION AND STAFF

Effective May 31, 1960, the division of woods was established in the department of botany, Museum of Natural History. Dr. William L. Stern was appointed curator of this division on June 1, 1960. Concurrently the division of woods in the department of science and technology was abolished.

Dr. Gus W. Van Beek was appointed associate curator of the division of archeology, department of anthropology, on July 1, 1959.

Dr. Richard Cifelli accepted an appointment as associate curator in the division of invertebrate paleontology and paleobotany on July 1, 1959. Another vacancy in this division was filled by the appointment of Erle G. Kauffman as assistant curator on June 15, 1960.

Carl H. Scheele was appointed, effective September 29, 1959, assistant curator of philately, and Dr. Sami K. Hamarneh, associate curator of medical sciences on September 24, 1959.

In the division of cultural history, John N. Pearce was appointed assistant curator on October 5, 1959. The vacancy in the division of industrial cooperation was filled on December 28, 1959, by the appoint of Dr. Charles O. Houston.

On February 1, 1960, Dr. John J. Wurdack reported for duty as associate curator of the division of phanerogams.

A. J. Wedderburn, Jr., associate curator of graphic arts, resigned on March 15, 1960, to accept other employment.

Dr. Paul Bartsch, who had retired on April 30, 1946, after serving 50 years on the staff of the United States National Museum, and as an honorary associate in the division of mollusks since that date, died at Lebanon, Va., on April 24, 1960.

Dr. J. B. Knight, research associate in invertebrate paleontology since January 1, 1955, and from January 1, 1945, to December 31, 1954, associate curator in that division, died at Sarasota, Fla., on March 21, 1960.

Respectfully submitted.

REMINGTON KELLOGG, *Director.*

DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.

Report on the Bureau of American Ethnology

Sir: I have the honor to submit the following report on the field researches, office work, and other operations of the Bureau of American Ethnology during the fiscal year ended June 30, 1960, conducted in accordance with the act of Congress of April 10, 1928, as amended August 22, 1949, which directs the Bureau "to continue independently or in cooperation anthropological researches among the American Indians and the natives of lands under the jurisdiction or protection of the United States and the excavation and preservation of archeologic remains."

SYSTEMATIC RESEARCHES

Dr. Frank H. H. Roberts, Jr., Director of the Bureau, devoted part of the year to general supervision of the activities of the Bureau and the River Basin Surveys. In July he inspected the work of excavating parties operating in the Pomona Reservoir area in Kansas, the Big Bend and Oahe Reservoir areas in South Dakota, and a portion of the Oahe Basin in North Dakota. Three of the parties were from cooperating agencies and three represented the River Basin Surveys. In addition, he visited two excavations that were not a part of the salvage program, one conducted by a University of Nebraska field party and the other by a group from the State Historical Society of Nebraska. Dr. Roberts was accompanied by Carroll Burroughs from the Branch of Archeology of the Washington office of the National Park Service and Dr. Robert L. Stephenson, Chief of the Missouri Basin Project of the River Basin Surveys. While at Pierre, S. Dak., they participated in an informal conference attended by leaders of all the parties working in the Plains during the summer, many of their student helpers, and representatives from various universities and museums in the area. Virtually every phase of Missouri Basin archeology was discussed.

In November Dr. Roberts went to Lincoln, Nebr., where he reviewed the operations of the field headquarters and laboratory of the River Basin Surveys and took part in the sessions of the Plains Archeological Conference at the University of Nebraska. At Omaha he met with representatives of the Corps of Engineers and the Region Two Office of the National Park Service to consider various problems pertaining to salvage operations in the Missouri Basin.

During late December and early January Dr. Roberts represented the Bureau at the meetings of the American Anthropological Association in Mexico City. He also visited various museums and archeological sites in the surrounding area. Late in January after his return to Washington he participated in the meetings of the Committee for the Recovery of Archeological Remains held at the Department of the Interior. He presented a summary of the results of the activities of the River Basin Surveys during the preceding year and joined in the discussions pertaining to future plans for the Inter-Agency Archeological Salvage Program.

In April Dr. Roberts went to Lincoln to inspect the operations of the Missouri Basin project office and met with representatives of Region Two of the National Park Service to consider the fiscal situation and fieldwork to be carried on during the 1960 summer season. Dr. Roberts assisted in the preparation of budgets and plans for the various River Basin Surveys parties which were to be leaving Lincoln early in June.

At the request of the National Park Service, Dr. Roberts was authorized to serve as a member of an advisory group for the Wetherill Mesa excavations at Mesa Verde National Park. He went to Mesa Verde late in May and with other members of the group inspected the work under way at two large cliff ruins and in the project laboratory. The group spent one day discussing various problems pertaining to the project and made a number of recommendations with respect to the continuance of the investigations.

Dr. Roberts did the technical editing of a series of four reports on archeological excavations in three reservoir areas. They will appear as River Basin Surveys Papers Nos. 21–24 in Bulletin 179 of the Bureau of American Ethnology.

Dr. Henry B. Collins, anthropologist, continued his Eskimo studies and other Arctic activities. He prepared an article on the native peoples of the Arctic for a forthcoming edition of the *Encyclopaedia Britannica*, and his paper on Eskimo art appeared in the first issue of Dartmouth College's new journal devoted to Polar research. In another paper, published in *Current Anthropology*, he discussed recent archeological discoveries in Alaska and Siberia and assessed the roles of local culture growth, diffusion, trade, population movements, tradition, and geographical patterning as causative factors involved in the development and continuity of prehistoric Eskimo culture in the Bering Strait area.

Dr. Collins was elected to the Board of Governors of the Arctic Institute of North America for a 3-year term. He continued to serve as a member of two Arctic Institute committees: (1) the Publications Committee, which is responsible for preparation of the Institute's quarterly journal *Arctic* and its two series, *Technical Papers* and *Special Publications*, and (2) the Research Committee, which plans the Institute's research program by passing upon grant applications, acting as a scientific advisory group for military agencies engaged in conduct of basic research in the Arctic and Antarctic, and planning programs of Polar research which the Institute administers for Government agencies and other organizations.

He also continued to serve as chairman of the directing committee of the *Arctic Bibliography*, a comprehensive work prepared by the Arctic Institute of North America for the Department of Defense. The purpose of the bibliography is to provide a key to scientific publications in the principal libraries of the United States and Canada relating to the Arctic and sub-Arctic areas and to low-temperature conditions, and to assemble and systematize this material so that it may be readily available to scientists and others concerned with problems of northern research and development. In continuation of this program, Volume 8 of *Arctic Bibliography* (1,281 pages) was issued by the Government Printing Office in September 1959. It summarizes and indexes the contents of 5,622 publications in all fields of science. Volume 9, containing abstracts of 7,192 publications, is in press, and work is in progress on Volume 10. Covering the entire range of scientific literature in all languages on the Arctic and subarctic regions of the world, the *Arctic Bibliography* to date has abstracted and indexed the contents of 56,278 publications relating to these areas and to low-temperature conditions.

In July 1959 Dr. Collins submitted a proposal to the National Science Foundation for the Arctic Institute of North America to translate Russian anthropological publications relating to northern Eurasia. Much of the Soviet and earlier Russian anthropological literature, particularly that on the archeology, ethnology, and physical anthropology of Siberia, has a direct bearing on problems of American anthropology. However, this Russian literature is not available to the great majority of English-speaking anthropologists. English translations of selected articles and monographs from Russian journals and series would begin to meet this long-felt need. In March 1960 the National Science Foundation awarded a grant to the Arctic Institute for the translation project and the work began in April, under the direction of Dr. Henry N. Michael of Temple University. An advisory committee, of which Dr. Collins is chairman, selects materials for translation and advises on matters pertaining to the publication and distribution of the translations. The translations will be printed in an inexpensive format, as a special publication series of the Arctic Institute, and offered for sale at modest prices.

With the support of grants from the American Philosophical Society and the National Science Foundation, Dr. Collins left for Europe June 24 to make a comparative study of archeological materials in European museums and to attend the 34th International Congress of Americanists in Vienna and the 6th International Congress of Anthropological and Ethnological Sciences in Paris.

At the beginning of the fiscal year, Dr. William C. Sturtevant, ethnologist, was concluding a period of fieldwork begun in February 1959 among the Seminole Indians in Florida. Returning north, he spent July 8 in and around Charleston, S.C., where he examined several old Southeastern Indian specimens and a portrait of Osceola, the famous Seminole leader, in the Charleston Museum, visited Osceola's grave at nearby Fort Moultrie, and briefly investigated modern Gullah Negro basketmaking near Fort Moultrie.

On his return to Washington, Dr. Sturtevant spent most of his time at work on the materials collected during his extended field trip in Florida. He also prepared a paper on the agriculture of the 16th-century Taino Indians of the West Indies, which he delivered at the 58th Annual Meeting of the American Anthropological Association in Mexico City in December. While in Mexico Dr. Sturtevant visited the impressive Maya archeological site at Palenque and then spent four days observing the lacquer-making industry at Uruapan, Michoacán, and making a small collection illustrating this craft for the National Museum.

In mid-November, Dr. Sturtevant spent two days at Newtown, Cattaraugus Reservation, New York, for the wake and funeral of Solon Jones, who was a leader of the Longhouse religion, a great expert on Seneca ceremonies, a well-known orator in Seneca, and in his younger days a famous lacrosse player. Mr. Jones will be greatly missed by his many Iroquois friends and coreligionists and also by anthropologists familiar with his community.

Dr. Sturtevant attended the 12th Conference on Iroquois Research (Red House, N.Y., in October), the annual meetings of the Association for Asian Studies (New York, in April), and the Society for American Archaeology (New Haven, in May).

Dr. Wallace L. Chafe, linguist, was engaged in fieldwork on the Tonawanda Reservation in New York State during July, August, and early September. He collected material for the completion of a Seneca dictionary and recorded and transcribed several religious texts which are part of the Longhouse ceremonial pattern. This fieldwork was sponsored by the New York State Museum and Science Service in cooperation with the Bureau of American Ethnology.

Dr. Chafe served as chairman of the 12th Conference on Iroquois Research, held at Red House, N.Y., October 16–18.

During the first three weeks of November Dr. Chafe traveled to North Dakota and Oklahoma to acquaint himself with the present number and location of speakers of the Caddoan languages. This language family includes Arikara, Pawnee, Wichita, and Caddo. He obtained estimates of the number of speakers of each language, collected word lists, and made lexicostatistic comparisons. The trip was made under a grant from the American Philosophical Society.

He returned to North Dakota for the first three weeks of June to collect further material on the Arikara language. He obtained phonological, grammatical, and lexical data which will be used in a comparative study of the languages of the Caddoan family.

Dr. Chafe published articles on the Seneca language in *Language* and the *International Journal of American Linguistics*. In March he completed an index of the journal *Language* for the years 1955–59. Under the auspices of the American Philosophical Society, he began work during the spring on a project designed to obtain estimates of the present number of speakers of each of the Indian languages of North America.

RIVER BASIN SURVEYS

The River Basin Surveys continued its participation in the Inter-Agency archeological and paleontological salvage program. Its activities were in areas to be flooded or otherwise destroyed by the construction of large dams. The work was carried on in cooperation with the National Park Service and the Bureau of Reclamation of the Department of the Interior, the Corps of Engineers of the Department of the Army, and a number of State and local institutions. The investigations during the fiscal year 1959–60 were supported by a transfer of $122,055 from the National Park Service to the Smithsonian Institution. Of that sum, $98,055 was for use in the Missouri Basin and $24,000 for investigations along the Chattahoochee River in Alabama and Georgia. On July 1, 1959, the Missouri Basin Project had a carryover of $10,764, and that, with the new appropriation, provided a total of $108,819 for the program in the Missouri Basin. The grand total of funds available for the River Basin Surveys for 1959–60 was $132,819.

Activities in the field throughout the year were mainly concerned with excavations, although some limited surveys were carried on and one party made a series of studies of skeletal material in museums and laboratories throughout the Missouri Basin. Because of a reduction in funds, fieldwork was more limited than in the previous year. On July 1, 1959, there were three excavating parties working in the Missouri Basin in South Dakota, and the mobile group was operating in Nebraska. One of the parties in South Dakota was digging sites in the Big Bend Reservoir area and the other two were working in the Oahe Reservoir area. The excavating parties completed their work and returned to the headquarters at Lincoln, Nebr., in August, while the mobile party finished its season on August 21, after having visited 22 institutions and 11 field camps in six Missouri Basin and three adjacent States.

In December one small party made a brief trip to the Lewis and Clark Lake above the Gavins Point Dam to examine a site which was being destroyed by wave action. The same party also visited a mound group near Mitchell, S. Dak., where unauthorized digging had been reported. The cooperation of the owner was obtained to prevent further destruction of the site which is an exceptional one for that area. From Mitchell the party proceeded to the Big Bend Dam site and made an inspection of the construction activities then under way. A second party returned to the Lewis and Clark Lake in February and spent eight days salvaging materials from the site which had been examined in December. In addition to a member of the River Basin Surveys staff there was a representative from the Laboratory of Anthropology of the University of Nebraska. These men were assisted by the area engineer, the reservoir naturalist, and the reservoir manager. The cooperative effort produced materials which identified the site as being attributable to the Woodland cultures. Activities along the Chattahoochee River in Alabama-Georgia were resumed in January when a survey-testing party began operations in the Walter F. George Reservoir area which continued until mid-June when work was stopped and the head of the party returned to Lincoln, Nebr. Early in June one party began excavations in the Big Bend Reservoir area near the dam axis and another started digging at a mound site near the North Dakota-South Dakota boundary in the Oahe Reservoir area. A third party began studies the latter part of the month at the site of historic Fort Sully north of Pierre in the Oahe Reservoir Basin. All three were continuing their investigations at the end of the fiscal year.

As of June 30, 1960, the River Basin Surveys had carried on reconnaissance work or excavations in 255 reservoir basins located in 29 States. In addition, four canal areas and two lock projects had also been investigated. The sites located during the years between 1946, when the program started, and the close of the fiscal year total 4,948, and of that number 1,154 were recommended for excavation or limited testing. Because of the large number of sites and the lack of sufficient time and funds for the work, complete excavation has not been possible in any but a few exceptionally small ones. For that reason, when the term "excavation" is used, it implies digging only as much of a site as is deemed necessary to obtain a good sample of the materials and information to be found there.

Preliminary appraisal reports have been issued for most of the reservoir areas which were surveyed. In a few cases no archeological manifestations were noted and no general report was distributed. During the last fiscal year preliminary appraisal reports for the Oliver Dam, the Walter F. George Dam and Lock project, and the Columbia Dam and Lock project on the Chattahoochee River were mimeographed and distributed. Since the beginning of the salvage program 188 such reports have been issued. The discrepancy between the number of reservoirs surveyed and that of the reports issued is due to the fact that in several cases a number of projects located within a single basin or sub-basin were covered in one report.

By June 30, 1960, 487 sites in 54 reservoir areas located in 19 different States had been either tested or dug sufficiently to provide good information about them. The sites investigated range in age from those represting hunting and gathering cultures of about 10,000 years ago to early historic Indian village locations and the remains of frontier trading and Army posts of European origin. The results obtained from some of the excavations have been published in the Smithsonian Institution Miscellaneous Collections, in Bulletins of the Bureau of American Ethnology, and in various scientific journals and historical publications. During the year River Basin Surveys Papers Nos. 21–24, comprising Bulletin 179 of the Bureau of American Ethnology, were sent to the printer. The papers consist of a report on excavations in the Texarkana Reservoir Basin on the Sulphur River in east Texas, the Coralville Reservoir area on the Des Moines River in Iowa, and two detailed accounts about work in various sites in the McNary Reservoir area on the Columbia River. The Texarkana report was written by Edward B. Jelks. The Coralville paper was prepared by Warren W. Caldwell and the McNary Reservoir papers were the work of Joel L. Shiner and Douglas Osborne. The latter two round out and complete the data which were contained in Osborne's River Basin Surveys Paper No. 8, Bulletin 165, "Excavations in the McNary Reservoir Basin near Umatilla, Oregon." At the end of the year the editors were working on Carl F. Miller's manuscript which gives in detail the results of his excavations at the John H. Kerr Reservoir basin in the Roanoke River, Virginia-North Carolina.

On June 30, 1960, the distribution of reservoir projects that had been surveyed for archeological remains was as follows: Alabama, 4; Arkansas, 1; California, 20; Colorado, 24; Georgia, 8; Idaho, 11; Illinois, 2; Iowa, 3; Kansas, 10; Kentucky, 2; Louisiana, 2; Minnesota, 1; Mississippi, 1; Montana, 15; Nebraska, 28; New Mexico, 1; North Dakota, 13; Ohio, 2; Oklahoma, 7; Oregon, 27; Pennsylvania, 2; South Carolina, 1; South Dakota, 10; Tennessee, 4; Texas, 19; Virginia, 2; Washington, 11; West Virginia, 3; Wyoming, 22.

Excavations had been made or were under way in reservoir areas in Arkansas, 1; California, 5; Colorado, 1; Iowa, 1; Georgia, 7; Kansas, 5; Montana, 1; Nebraska, 1; New Mexico, 1; North Dakota, 4; Oklahoma, 2; Oregon, 4; South Carolina, 2; South Dakota, 4; Texas, 7; Virginia, 1; Washington, 4; West Virginia, 1; Wyoming, 2. The preceding figures include only the work of River Basin Surveys or that where there was direct cooperation between the Surveys and local institutions. The work done by State and local institutions under agreements with the National Park Service has not been included because complete information about them is not available in the River Basin Surveys office.

The National Park Service, the Bureau of Reclamation, the Corps of Engineers and other Army personnel, and various State and local institutions contributed helpful cooperation throughout the year. Transportation and guides were provided by the Corps of Engineers for the reconnaissance in one of the reservoir areas, and invaluable help was received through the commanding officer at Fort Benning in Georgia who assigned certain Army personnel to assist in some of the activities in the portion of the Walter F. George Reservoir Basin which lies in the Fort Benning Reservation. In addition, the Army Air Command at Lawson Field furnished a helicopter so that aerial photographs could be made of major archeological sites and current excavations, as well as the progress in construction of both the Columbia Dam and Lock and the Walter F. George Dam and Lock. In the Missouri Basin the project engineers for the Oahe Reservoir provided storage space for equipment and also space for temporary living accommodations. Mechanical equipment was lent in several instances by the construction agency, which accelerated both the stripping of the top soil from sites and the back-filling of trenches and test pits. The field personnel of all of the cooperating agencies assisted the party leaders from the River Basin Surveys in numerous ways and the relationship was excellent in all areas. Both in Washington and in the field the National Park Service continued to serve as the liaison between the various agencies. The Park Service also prepared the estimates and justifications for the funds needed to carry on the salvage program. Along the Chattahoochee River the Georgia Historical Commission, the University of Georgia, and various local clubs and groups of citizens in both Alabama and Georgia assisted the leader of the River Basin Surveys party in many ways.

General supervision of the program was carried on from the main office in Washington, while the activities in the Missouri Basin continued to operate from the field headquarters and laboratory at Lincoln, Nebr. The latter also provided equipment and office assistance for the Chattahoochee River project. The Lincoln laboratory processed the materials collected by excavating parties in the Missouri Basin and also handled those from the Chattahoochee Basin.

Washington office.—The main headquarters of the River Basin Surveys at the Bureau of American Ethnology continued throughout the year under the direction of Dr. Frank H. H. Roberts, Jr. Carl F. Miller, archeologist, was based at that office and from time to time assisted the Director in some of the general administrative problems. Harold A. Huscher, archeologist, worked under the general supervision of the Washington office but because of lack of space and laboratory facilities continued to work at the field headquarters in Lincoln, Nebr.

At the beginning of the fiscal year Mr. Miller was occupied with the technical report on excavations which he previously conducted at the Hosterman Site in the Oahe Reservoir basin in South Dakota. In September he attended a conference on eastern archeology held at Ligonier, Pa., under the auspices of the Carnegie Museum of Pittsburgh and composed of a group of invited guests. The problems discussed were mainly concerned with the Paleo-Indian, Eastern Archaic, and Woodland cultures. In October Mr. Miller made a survey of the Sutton Reservoir area in West Virginia. In November he attended the Southeastern Archeological Conference held at Macon, Ga. He completed his report on the Hosterman Site in February. During April he made a survey of archeological sites along the Cowpasture River in Bath County, Virginia, investigating a number of small rock mounds and several open sites. During the year Mr. Miller examined and reported on several collections of artifacts which were sent in from various areas in the East and Southeast. He also gave a number of talks before various groups and societies in the Washington area.

At the beginning of the fiscal year Mr. Huscher was in the Lincoln office working on maps, records, and collections from the Oliver Dam and Reservoir, the Columbia Dam and Lock, and the Walter F. George Dam and Lock in the Chattahoochee Basin between Alabama and Georgia. In July he attended a field conference held at Pierre, S. Dak. In November he went to Macon, Ga., and participated in the Southeastern Archeological Conference held there. On his return to Lincoln he attended the Plains Conference which was held at the University of Nebraska. His three appraisal reports on the Chattahoochee projects were completed in October, November, and December. They were processed at the Lincoln office and were distributed from the Washington office in April. In January Mr. Huscher returned to the Alabama-Georgia area where he resumed his field investigations in the Walter F. George Reservoir area. He returned to Lincoln late in June and at the end of the fiscal year was on annual leave.

Alabama-Georgia.—From January 19 to June 13 a series of test excavations was carried on at 10 sites in the area to be flooded by the Walter F. George Dam and Lock project. Six of the sites were in Georgia and four in Alabama. Because the season was unusually wet, work was limited for much of the time to sites in the sandy bottoms. At each location a number of pits 10 feet square were sunk through the deposits to sterile subsoil. At one of the sites in Georgia the main occupation appeared to have been Early Mississippian, although there was a thin surface overlay of the late Creek potsherds. There were some indications that Weeden Island peoples had been there for a time, and in the bottom levels decomposed flints similar to those which occur in abundance on the Macon Plateau were present. The various materials from the site suggest a long period of occupation or several occupations at intervals covering a considerable span of years. At two of the Georgia sites there were large plowed-down mounds with indications of village areas. One of them presumably dates from the Archaic period, and the other, in addition to Archaic materials from levels below the mound, also gave evidence of Weeden Island affiliations. Several of the sites contained Woodland materials, and one of those in Alabama presumably was the location of the Yuchi village mentioned by William Bartram and Benjamin Hawkins in their reports on travels through the Creek country in the 18th century. During the field season collections were made from a total of 48 sites, 26 of which had not been previously investigated. Field lots of specimens, most of which were excavated, numbering 1,680, were added to the previous 1,086 field lots collected in the 1958 and 1959 seasons. This makes a total of 2,766 field lots for the three seasons of investigations along the Chattahoochee.

In addition to the work of the River Basin Surveys parties there were cooperative projects by the University of Georgia, the University of Alabama, and Florida State University. At the end of the fiscal year the University of Georgia was excavating a large platform mound near Stark's Landing in Georgia. The University of Alabama was digging in a village site adjacent to a large mound near Upper Francis Landing in Alabama. The Florida State University party was beginning investigations at the Spanish Fort of Apalachicola and the adjacent aboriginal village near Holy Trinity, Ala.

Missouri River Basin.—The Missouri Basin Project, for the fourteenth consecutive year, continued to operate from the field headquarters and laboratory in Lincoln, Nebr. Dr. Robert L. Stephenson served as chief of the project throughout the year. Activities included surveys, excavations, analysis of materials, and reporting on results. During the summer months efforts were mainly concerned with excavations. Analyses and the preparation of reports received the major attention during the winter months. The special chronology program, begun two years ago, continued to receive attention throughout the year.

At the beginning of the fiscal year the permanent staff, in addition to the chief, consisted of five archeologists, one administrative assistant, one clerk-stenographer, one part-time file clerk, one clerk-typist, one illustrator, one photographer, and three museum aides. Temporary employees included one cook and six crewmen.

During the summer field season one archeologist and one physical anthropologist were temporarily added to the staff. During July, 11 additional crewmen were employed. The temporary archeologist was terminated on August 28, and the temporary physical anthropologist on August 21. All field crewmen were terminated during the last week of August.

On September 4, one permanent archeologist resigned to return to graduate school, and on May 27 one permanent archeologist resigned to join the staff at the University of Tennessee. On January 2, the clerk-typist resigned, and on February 5, the clerk-stenographer resigned. On February 23, a clerk-stenographer joined the staff but resigned on April 1 and was replaced on May 2. The file clerk was transferred from part time to full time on June 27. The temporary cook was transferred to laboratory assistant on September 1 and to the permanent staff on January 2. During the period from April 2 to June 1, one archeologist was lent to the National Park Service to conduct archeological excavations at Colonial National Historical Park, Yorktown, Va.

At the end of the fiscal year there were three archeologists in addition to the chief, one administrative assistant, one file clerk, one clerk-stenographer, one illustrator, one photographer, three museum aides, and one laboratory assistant on the permanent staff, and 12 crewmen on the temporary staff.

During the year there were nine Smithsonian Institution River Basin Surveys field parties at work within the Missouri Basin. Two were in the Oahe Reservoir area, one in the Big Bend Reservoir area, and one (a mobile party) covered the Missouri Basin area in general during July and August. Two small parties made investigations during December and February in the Gavins Point Reservoir area. Two parties were excavating in the Oahe Reservoir area and one in the Big Bend Reservoir area during June.

Other fieldwork in the Missouri Basin during the year included 10 parties from State institutions operating under cooperative agreements with the National Park Service and in cooperation with the Smithsonian Institution in the Inter-Agency Archeological Salvage Program.

Reduction of funds for fiscal year 1960 necessitated a curtailment of field activities, in comparison with past years, and a shift in the methods of carrying on the salvage program. Despite the accomplishments of previous years in salvaging archeological values from the many reservoir areas in the Missouri Basin, scores of sites still remain to be studied and the reservoirs are rapidly nearing completion. The enforced reduction of activities presented a critical problem. The shift, or readjustment, in methods of fieldwork seemed the only reasonable expedient to accomplish the mission set out for the Salvage Program. This was a shift from major excavation of key sites and sampling of nearby, related sites, to a mere sampling of both key and secondary sites. This change in emphasis will be satisfactory for at least two seasons because of the earlier work in these same areas when full-scale excavations were possible at a number of key sites. There is a framework of information from extensively excavated sites against which the data from the newly sampled sites can be evaluated. There are, however, many major sites, outside the known cultural framework, that promise to provide an abundance of new information if excavated, but little or nothing if only sampled. Another year, these sites must be excavated or lost forever. The sampling approach, in the face of limited field activities, produced worthwhile results in the field seasons of 1959 and 1960. Full-scale excavations of key sites, though, must again be carried on in succeeding years.

At the beginning of the fiscal year, Dr. Warren W. Caldwell and a crew of six were engaged in testing a series of sites in the Big Bend Reservoir area. The specific locality was that of the construction area of the dam along the right bank of the Missouri River in Lyman County, South Dakota, and extending upstream to the area of the old Lower Brulé subagency, a distance of approximately 12 miles. Sampling investigations were made at 19 of the recorded sites in the area and two new sites were located, recorded, and tested. A variety of cultural manifestations is represented.

The first group of these sites is located near the mouth of Good Soldier Creek in the area where the powerhouse and right abutment for the Big Bend dam is to be built. Site 39LM235 had been partially destroyed by landing-ramp construction but was extensively tested in the remaining portions. Site 39LM236 was inundated by extreme high water of the Fort Randall Reservoir and tests made in it in the latter part of the season, after the water had receded, again demonstrated the uselessness of working a site that had been flooded. Sites 39LM237 and 39LM238 were examined with limited test pits. All four sites consisted of stratified concentrations of refuse material partially exposed in the cut bank along the river and creek. Very little artifact material was recovered this season and the results of the tests proved to be of small diagnostic value. The first three appear to have been sporadically occupied camping places. The fourth, the Good Soldier Creek site (39LM238), previously investigated, is a stratified site of Plains Woodland affiliation overlain by a Mississippian component.

A series of six sites near the mouth of Councelor Creek was investigated. Site 39LM240 was briefly tested and proved to be another sporadically occupied camp site with a few potsherds of the Iona types suggesting occupation in the later ceramic period of circular earth lodges. Site 39LM234 was extensively tested with a series of 10 test pits scattered through the multitude of hummocks and depressions on the surface. Results were disappointing but adequate to demonstrate that it was the location of a village of one of the late periods in the area. Sites 39LM88 and 39LM89, newly located in 1959, and the Tom Rattler site (39LM214) were briefly tested with very little diagnostic material being recovered. The Useful Heart site (39LM6) was extensively tested. There a sterile mantle 3 to 4 feet in depth covered the remains of a village of late circular houses related to the Stanley Focus. A lower level of occupation at a depth of 6.5 feet represented an earlier time level with pottery related to the Over Focus.

The next group of sites upstream (39LM229, 230, 231, and 233) were all briefly tested with negative results and written off as small, sporadically occupied camp sites. A fifth site in this group, the Pretty Head site (39LM232) was not investigated as it was the location of a large village and is scheduled for more extensive excavation than time would allow in the 1959 season. It is the only site in that immediate vicinity where additional work is required. The next group upstream included site 39LM217, where brief testing produced only scattered evidence of sporadic occupation, and four significantly productive sites. The School site (39LM216) was the remains of a large village of circular earth lodges and contained pottery of Iona types. One house quadrant and several test trenches were excavated. The Crazy Bull site (39LM219) was another large village site of circular earth lodges and provided pottery of the Iona, Stanley, and Talking Crow types. Half a house and several test trenches were excavated. Site 39LM220, likewise, had been a village of circular earth lodges and it yielded pottery predominantly of the Iona types. There a half house and several test trenches were excavated. Site 39LM221 was a group of three moderate-size burial mounds. Trenching in them uncovered burial pits, infant burials, and scattered human bones. The artifacts were not abundant but were sufficient to demonstrate a probable relationship of the site to the Truman Mound group (39BF224) excavated by Robert W. Neuman in 1958. Finally a brief investigation of one feature was made at the Hickey Brothers site (39LM4), excavated by Bernard Golden in 1958. There a probable rectangular house pattern was partially uncovered, but the data from the site still are inadequate for a convincing demonstration of the cultural group to which it belongs.

In all, the Caldwell party examined 21 sites, of which 1 was a burial mound group, 1 was a large village probably of the rectangular house period, 4 were large villages of late circular earth lodges, 1 was a stratified village of rectangular earth lodges overlain by an occupation of later, circular earth lodges, and 14 sites which were sporadically occupied camps producing little diagnostic material. Except for the Pretty Head site (39LM232), all others in this area may now be written off as not requiring further investigation unless something new is uncovered in the course of construction of the Big Bend Dam. The Caldwell party terminated the season's work on August 6, after 9 weeks in the field.

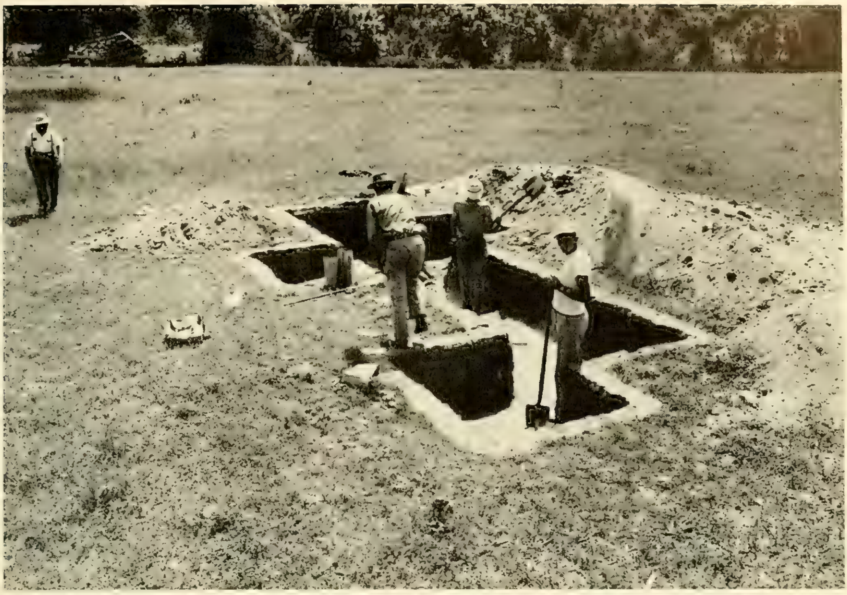
The second River Basin Surveys party in the field at the beginning of the year was a team of physical anthropologists consisting of William M. Bass, 3d, and two assistants. They were engaged in a survey of human skeletal materials from all the reservoir areas in the Missouri Basin, as well as skeletal materials from other institutions and areas outside reservoirs for the purpose of bringing together data on all the presently extant Indian remains from the Plains area. They visited all the field camps, assisting in the excavation of burials where needed, and went to all the museums and other repositories of archeological materials in the general area. They took anthropometric measurements on the remains of over 2,000 individuals, studying 22 institutional collections and visiting 11 field camps in Oklahoma, Kansas, Missouri, Nebraska, Iowa, Wisconsin, Minnesota, South Dakota, and North Dakota. The analyses of the scores of measurements, both cranial and postcranial, taken on each of the 2,000 individuals, will provide the first broad study of the physical characteristics of the Indians who occupied the prehistoric villages in the various reservoir areas in the Missouri Basin. With the data on the differences between the physical types, the archeologist will be in a much better position to understand the cultural movements of peoples between villages and village areas. This field party was materially assisted, through the kindness of Dr. Wilton K. Krogman, by a grant-in-aid to Bass from the University of Pennsylvania Child Growth and Development Center. The party completed its season on August 21, after 9 weeks in the field.

The third River Basin Surveys field party of the 1959 season began work in the Little Bend area of Sully County, South Dakota, in the Oahe Reservoir, on July 2. It consisted of a crew of seven under the direction of Dr. Charles H. McNutt. This party, like that of Caldwell in the Big Bend Reservoir, spent the season making a series of small-scale test excavations in a large number of sites along a restricted area of the Missouri River. The crew was supplemented in mid-season by 5 additional crewmen, making a total party of 12. Sample excavations were conducted at 18 of the 22 previously recorded sites in the Little Bend. The remaining four sites are of sufficient elevation to remain above water and also appear to be of minor significance. In addition, 11 new sites were located and recorded but only one was of sufficient value to warrant testing and mapping.

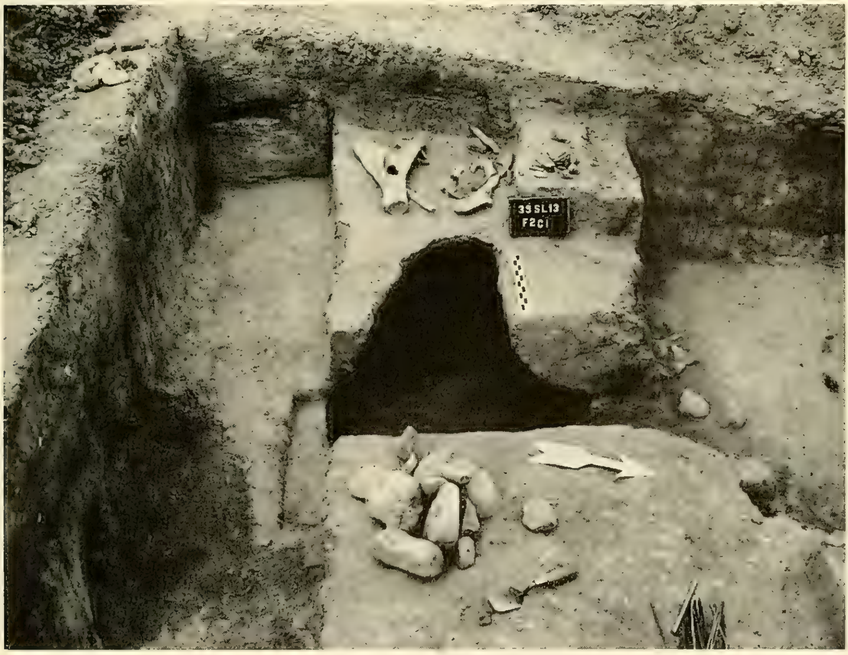
The uniformity of the cultural materials from the Little Bend is rather remarkable. Only two sites (39SL12 and 39SL13) provided any evidence of long-rectangular house villages, and that is only in the form of Thomas Riggs types of pottery. All the other sites had been small to large villages of circular earth lodges providing sherds of only two major classes of pottery, Russell Ware and Stanley Ware. House depressions in all sites are uniformly circular and are usually either ringed, shallow depressions, or unringed deep depressions. Russell Ware pottery occurs characteristically with the former and Stanley Ware pottery with the latter. The consistency of this association is striking. Villages with ringed house depressions and Russell Ware pottery were usually compact and consisted of 1 large (presumably ceremonial) house and from 5 to 10 small (presumably domiciliary) houses. No fortifications were found in association with any of these villages. Villages with unringed, deep house depressions and Stanley Ware pottery were either compact or diffuse and may or may not have had a particularly large (ceremonial) house and a fortification ditch. Some historic material was found in three of the four sites of this type examined. The individual sites are summarized briefly.

Site 39SL12 consists of the remains of a large ceremonial house and at least seven smaller houses located on a low, bench promontory. Three midden heaps and three cache pits were tested and the site was mapped. No defensive ditch could be found. Pottery consisted of both Russell Ware and Thomas Riggs Ware. Site 39SL13 is likewise situated on a low bench promontory and consists of some 40 house depressions, including 2 large ceremonial houses but no defensive ditch was located. There, 3 house depressions were tested, and 1 midden heap, 10 cache pits, 2 fireplaces, and 8 other test pits excavated, and the site was mapped. Pottery consisted of Stanley Ware, Russell Ware, and Thomas Riggs Ware, and a few objects of historic origin were found. They are the only two sites in the Little Bend area that suggest occupation during the long, rectangular-house period.

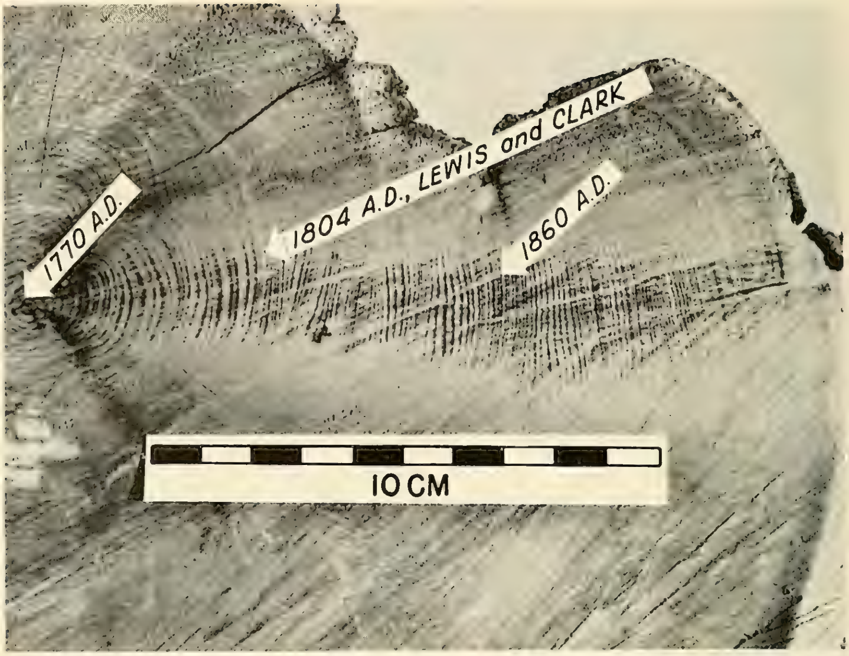
Site 39SL19, located on the floodplain, was a compact village with deep depressions surrounded by a semicircular fortification ditch.



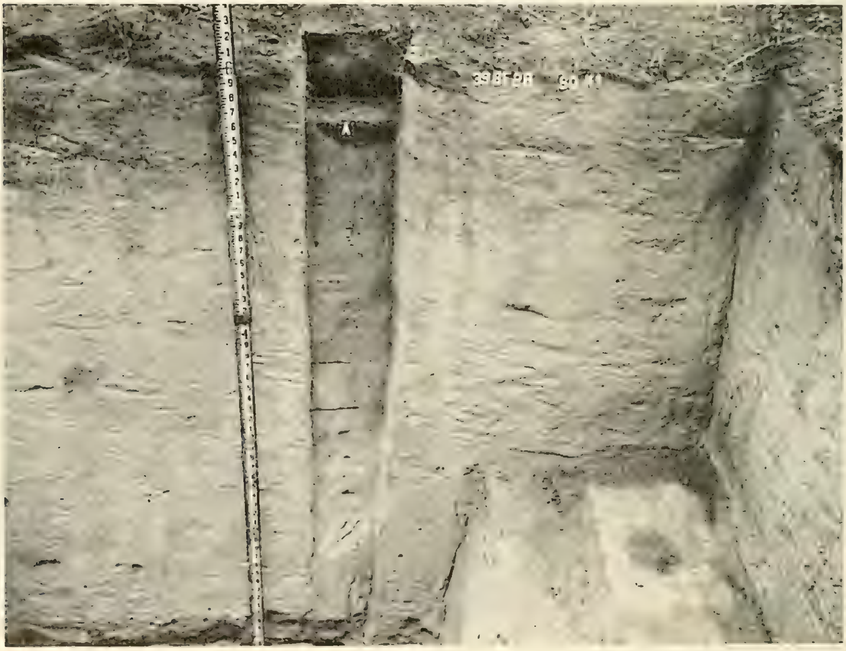
1. Test excavation in site 39SL19, a large village of circular earthlodges, in the Little Bend area of the Oahe Reservoir, producing Stanley Ware pottery. Examples of architectural style, settlement pattern, and artifact materials can be obtained by a series of tests of this kind at each site. River Basin Surveys.



2. Expanded test excavation in edge of circular house at site 39SL13, in the Little Bend area of the Oahe Reservoir. Center of house is to right of picture. A leaner post of the house wall can be seen to right of menu board. Large excavated cache pit is shown in center of picture and an unexcavated cache pit appears as dark semicircle at left. River Basin Surveys.



1. Section of a large cedar (*Juniperus*) cut by a Missouri Basin Project-Smithsonian Institution field party in 1958. The tree stood high on the bluffs overlooking the "Grand Detour," the great loop of the Missouri now called the Big Bend. The earliest annual ring dates from ca. A.D. 1770. This log provides a fine illustration of variable tree growth in response to varying rainfall. The drought years of the 1840's and the 1930's are plainly visible. River Basin Surveys.



2. View of soil profile section in site 39BF2, a deeply buried, multicomponent site in the Big Bend Reservoir. Soil samples were taken from seven zones in this cut to assist in determining the geologic-climatic periods of the various occupations. River Basin Surveys.

Tests were made in one midden heap, a cache pit, and eight other test pits, and the site was mapped. An extensive sample of Stanley Ware pottery was obtained. Site 39SL3, located on a low terrace, was a compact area of 26 house depressions but no evidence of a fortification ditch or large ceremonial house. Four houses were tested and three cache pits, three fireplaces, and a burial were excavated. The site was mapped. Pottery was of the Stanley Ware and some historic objects were recovered. Site 39SL28, located on the low brush promontory just east of 39SL12, consisted of one large ceremonial house depression and at least seven other smaller house depressions. One house was tested, four middens and two cache pits were excavated, and the site was mapped. Stanley Ware pottery predominated in the collections but some Russell Ware was also found. These three sites and the one multicomponent site listed in the Thomas Riggs group above were the only sites with a predominance of Stanley Ware pottery.

At the following sites Russell Ware pottery predominated. Site 39SL8, situated on a low terrace, represents a diffuse village of numerous house depressions. Three houses were tested, and one midden, three cache pits, one fireplace, and one test pit were excavated, and the site was mapped. Site 39SL30 consisted of two very shallow house depressions on a low terrace promontory. One house was tested, and two middens and a fireplace were excavated. A map was made of the site. Site 39SL24 was a small, compact village containing one large ceremonial house depression and at least five smaller depressions located on the low terrace above the floodplain. Four houses were tested, a midden, a fireplace, and a cache pit were excavated, and the site was mapped. Site 39SL202, the remains of another village situated on a low terrace above the floodplain, consisted of two rather large, ringed house depressions. Both houses were tested, two middens, and two fireplaces were excavated, and the site was mapped. Site 39SL36 contained only one very faint house depression on a high (or second) terrace and a small rock cairn. The house was tested, four middens and a fireplace were excavated, and the site was mapped. It was a small, poor site but some additional house depressions may have been present. Site 39SL50, newly located in 1959, consisted of two shallow house depressions on a small terrace promontory. One house was tested, a midden and a test pit were excavated, and the site was mapped. It was a small, unproductive site. Site 39SL23 consisted of a large ceremonial house depression and 17 smaller house depressions located on a high (or second) terrace above the floodplain. A considerable quantity of collared rim sherds were present in the collections. Three houses were tested, a midden, four cache pits, and two test pits were excavated, and the site was mapped. Site 39SL21 was a single house depression and two rock cairns located on the high terrace. Tests of cairns were negative. The house was tested, two cache pits, a fireplace, and two test pits were excavated, and the site was mapped. Site 39SL22 was a large ceremonial house depression and three smaller depressions situated on the high terrace. One house was tested, two cache pits, a fireplace, and two test pits were excavated, and the site was mapped. Site 39SL20, consisting of two faint house depressions on the lower terrace, was a small site and not very productive. One house was tested, a midden, a cache pit, and two fireplaces were excavated, and the site was mapped. Site 39SL17 contained a large ceremonial house and six smaller depressions on the high terrace. Three houses were tested, two cache pits, a fireplace, and a test pit were excavated, and the site was mapped. Site 39SL16 was composed of three shallow house depressions and several other irregular depressions situated on the high terrace. Two houses were tested, a cache pit and a fireplace were excavated, and the site was mapped. This was a small and unproductive site. Site 39SL14 contained two house depressions on the high terrace adjacent to Site 39SL13. Both houses were tested, a midden was excavated, and the site was mapped. Site 39SL34, a single house depression on the high terrace and a part of the 39SL13 and 14 complex, was not productive. The house was tested, a midden was excavated, and the site was mapped.

Ten sites, newly located in 1959, consisted of only minor-find spots of specimens, random fire hearths, cache pits, and similar isolated features. None is of enough significance to warrant further attention, though surface collections and/or minor tests were made in all of them. These sites are 39SL47, 48, 49, 51, 52, 53, 54, 55, 56, and 57. Likewise, site 39SL25 was examined and written off as of no further interest. Thus by the end of the season tests had been made to provide architectural details for 36 circular earth lodges in 17 separate sites and excavations had been conducted in 25 middens, 33 cache pits, 16 fireplaces, and 26 random test pits. One burial was recovered and 19 sites were mapped. Houses were consistently tested by excavating a trapezoidal area on the depression edge with the base of the trapezoid (10–25 feet wide) just outside the house ring and the smaller base (5–10 feet) near the center. This gave maximal coverage of the house periphery. In many cases these tests were extended to the central fireplace, and where the wall post pattern seemed unsatisfactory the outer edge of the trapezoid was extended. The McNutt party completed its season's work on August 29, after 8½ weeks in the field.

The fourth River Basin Surveys party for the 1959 season was directed by Dr. Alfred W. Bowers. This crew of five began intensive excavations at the Anton Rygh site (39CA4), in Campbell County, South Dakota, on July 13, and continuing the investigations that were carried on by Dr. Bowers during the previous two summers. The objective for this final season was the excavation of portions of the early, long-rectangular house component that underlay at least three later occupations of circular earth-lodge villages. This objective was only partially achieved. Portions of a rectangular house wall were uncovered, and a substantial series of early ceramic types of the Thomas Riggs-Huff sequence was collected. In addition to this, a major contribution to an understanding of this type of prehistoric site was made in the excavation of a sequence of fortifications and defensive structures especially equipped with bastions and "strong points." To distinctive fortification systems separated by 4 to 5 feet of fill were identified. The upper one is associated with late Alaska material and represents one style of fortification in use in earliest historic times. The lower system is associated with the Thomas Riggs-Lower Fort Yates material of the rectangular house period of seven or eight centuries ago. The Bowers party completed its season's work on August 22, after six weeks in the field.

Two Missouri Basin Project field parties were in operation for brief periods during the winter months. In response to notification by the area engineer at Gavins Point Dam that an archeological site was being destroyed by wave action at Lewis and Clark Lake, Robert W. Neuman visited the site in company with Corps of Engineers personnel during the period December 2–5. Brief testing of the Miller Creek site (25KX15) demonstrated that it was a campsite of the period prior to the sedentary earth-lodge villages in the area and may be of considerable significance when excavated later in conjunction with proposed bank stabilization work by the Corps of Engineers. The fine cooperation of the Corps of Engineers staff was most helpful in this project. In addition to work at the Miller Creek site, Neuman visited a burial-mound group near Mitchell, S. Dak., where unauthorized digging had been reported, and found that one of the mounds had been destroyed. The landowner agreed to allow no further unauthorized excavation there. The trip was completed with a brief survey of the construction activities at the Big Bend Dam.

The second wintertime field party in the Missouri Basin also went to the Miller Creek site (25KX15). This was a cooperative project between the River Basin Surveys, the University of Nebraska Laboratory of Anthropology, and the Corps of Engineers, U.S. Army, at the Gavins Point Dam. The area engineer advised that bank-stabilization work would begin in the area of this site the week of February 15. During the period February 12–20, Robert W. Neuman, of the River Basin Surveys staff, and Thomas A. Witty, of the University of Nebraska Laboratory of Anthropology, excavated a portion of the site. They were assisted by the area engineer, the reservoir naturalist, and the reservoir manager of the Gavins Point Dam. The Laboratory of Anthropology provided a part of the field expenses. This is another example of the outstandingly fine cooperation between various Federal and State agencies in the Inter-Agency Archeological Salvage Program. The Miller Creek site, on the right bank of Miller Creek at its confluence with the Missouri River in Knox County, Nebraska, is a prehistoric Indian campsite exposed at a depth of from 3 to 6 feet below the surface. Test trenches revealed a moderate quantity of artifacts including chopping tools, projectile points with and without side notches, and a few pottery fragments. The material relates the site to the Woodland cultures. In addition, a day was spent at a site on the South Dakota side of Lewis and Clark Lake, collecting some deeply buried bison bones that appear to be of an extinct species.

The 1960 summer field season in the Missouri Basin began in the Big Bend Reservoir area on June 8. Dr. Warren W. Caldwell and the party under his direction, prevented by heavy rains and unexpected high water from reaching its primary objective of sites in Old Armstrong County, Oahe Reservoir, temporarily transferred their activities for the early part of the season to the area about the mouth of Medicine Creek in Lyman County, South Dakota. By the end of the fiscal year Caldwell had a crew of eight men, and excavations were well underway at Sites 39LM222 and 39LM224, two small earth-lodge villages briefly tested in the 1959 season.

The second Missouri Basin Project field party starting work in June was under the direction of Robert W. Neuman. It was engaged in the excavation of a burial-mound site near the North Dakota-South Dakota State line, in the Oahe Reservoir area, Sioux County, North Dakota. This site, the Boundary Mound group (32SI1), consists of several burial mounds of the Plains Woodland period, and is one of the extensive series of Woodland mound sites in the Oahe Reservoir area scheduled for excavation by this party during the 1960 season. By the end of the year excavations at this site were nearly completed. Mr. Neuman and his crew of six men had cut extensive trenches across three of the mounds and had dug several test pits in other parts of the site.

The third Missouri Basin Project field party at work in June was a crew of three under the direction of G. Hubert Smith in the Oahe Reservoir area. This historic-sites party planned to begin digging on June 23 at the site of old Fort Bennett (39ST26) in Stanley County, South Dakota. When it reached that location, however, it found most of it already under water and a change was necessary. The party moved to Fort Sully (39SL45) in Sully County on the other side of the Missouri River, and on June 28 started an investigation of the foundations and refuse dumps at that historic military post in order to verify several ground plans of the post and gather a representative series of specimen materials of the period.

Cooperating institutions working in the Missouri Basin at the beginning of the fiscal year included a party from the University of Kansas, directed by Dr. Carlyle S. Smith, excavating at the Stricker Village site (39LM1) in the Big Bend Reservoir and testing two nearby sites, 39LM226 and 39LM227; a joint party from the University of North Dakota and the State Historical Society of North Dakota, directed by Dr. James H. Howard, excavating at the Huff site (32MO11) in the Oahe Reservoir area; and two parties from the University of Missouri, directed by Dr. Carl F. Chapman, excavating a series of sites in the Pomme de Terre Reservoir area and making preliminary surveys in the Kassinger Bluff Reservoir area of west-central Missouri. In July and August, a party from the Kansas State Historical Society, under the direction of Roscoe Wilmeth, excavated one site and tested three others in the Pomona Reservoir area of east-central Kansas. In October a party from the University of South Dakota, directed by William Buckles, excavated a cemetery area at the Four Bears site (39DW2) in the Oahe Reservoir area of South Dakota. In April the Nebraska State Historical Society had a party, under the direction of Marvin F. Kivett, surveying sites in the Red Willow Reservoir in southwestern Nebraska. At the end of the fiscal year, four cooperating institutions had archeological crews in the field: The State Historical Society of North Dakota, at the Huff site (32MO11) in the Oahe Reservoir area, under the direction of W. Raymond Wood; the University of Nebraska, at the Leavenworth site (39CO9) in the Oahe Reservoir area, directed by Dr. Preston Holder; the University of Missouri, surveying and testing sites in the Kassinger Bluff Reservoir area, directed by Dr. Carl F. Chapman; and the Kansas State Historical Society, in the Wilson Reservoir area in central Kansas, directed by Roscoe Wilmeth. All these parties were operating through agreements with the National Park Service and were cooperating in the Smithsonian Institution research program.

During the time that the archeologists were not in the field, they were engaged in analysis of their materials and in laboratory and library research. They also prepared manuscripts of technical, scientific reports and wrote articles and papers of a more popular nature.

The Missouri Basin Chronology Program, started by the staff archeologists of the Missouri Basin Project in January of 1958, and described in the Seventy-sixth Annual Report of the Bureau of American Ethnology, continued to operate throughout the year. The program has continued to have marked success and the entire group of 34 individuals and 20 research institutions has continued to cooperate in assembling data, under the general direction of the Missouri Basin Project staff members. Studies by Dr. Paul B. Sears of Yale University on the pollen samples collected last year have continued to progress, and at least one profile is being verified. Another group of 11 radioactive carbon-14 samples has been submitted to the University of Michigan Memorial Phoenix Laboratory, under the direction of Professor H. R. Crane, to add to the 11 dates already obtained on carbon-14 specimens. Plans for full-time participation by a dendrochronologist made little headway during the year but look promising for next year. On a part-time basis, the dendrochronologist, Harry E. Weakley, continued to prepare materials for study. Alan H. Coogan, though no longer a member of the River Basin Surveys staff, continued his studies of the geologic-climatic aspects of the chronology of the terrace-situated sites in the Fort Thompson region of the Big Bend Reservoir area. The 11 radiocarbon dates already obtained in the Missouri Basin Chronology Program are given in their relative temporal positions in table 1. The dendrochronological material is illustrated in plate 2, figure 1, and the soil profile of a site near Fort Thompson, S. Dak., is shown in plate 2, figure 2, to illustrate the geologic-climatic approach to the dating of archeological materials.

The laboratory and office staff spent its full effort during the year in processing specimen materials for study, photographing and illustrating specimens, preparing specimen records, and typing, filing, and illustrating records and manuscript materials. The accomplishments of the laboratory and office staff are listed in tables 2 and 3.

As of June 30, 1960, the Missouri Basin Project laboratory had cataloged 1,219,563 specimens from 2,097 numbered sites and 58 collections not assigned site numbers in the 14 years of its operation. It may be noted in table 2 that considerable material from the Chattahoochee River Basin was processed in the Missouri Basin Project laboratory this year. This reflects collaboration for expediency and economy between the archeological investigations outside the Missouri River Basin and the facilities for work within the Missouri Basin and constitutes a major contribution to the effectiveness of the salvage program in the southeastern United States. In addition to the processing of these specimens, the Missouri Basin Project facilities were utilized for a portion of the year in the preparation of maps, illustrations, and the three mimeographed appraisal reports resulting from the work in the Chattahoochee Basin last year. Without the aid of the Missouri Basin Project facilities these researches would not have progressed so rapidly.

The Missouri Basin Project staff archeologists and archeologists of the National Park Service and the cooperating State agencies working in the Missouri Basin met on July 24 in a roundtable field conference

Table 1.—Carbon-14 dates obtained by the Missouri Basin Chronology Program.

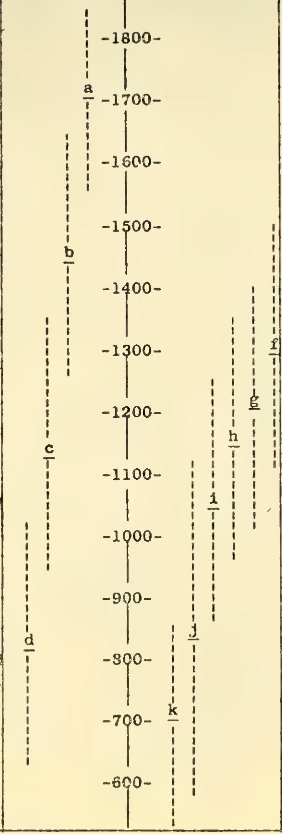
NEBRASKA	DATE (A.D.)	SOUTH DAKOTA
a. Lynch Site; a village of square houses with rounded corners, in Boyd County Sample: charcoal from general digging; dates a late occupation. 250±150 years old, or 1708 A.D., ±150 years		f. Cheyenne River Site (first occupation); a village of long, rectangular houses in Stanley County (Oahe Reservoir) Sample: burned house-post. 650±200 years old, or 1308 A.D, ±200 years
b. Site 25FT70; a small cluster of square houses in Frontier County (Medicine Creek Reservoir) Sample: charcoal from a house floor. 500±200 years old, or 1458 A.D., ±200 years		g. Thomas Riggs Site; village of long, rectangular houses in Hughes County (Oahe Reservoir). Sample: burned house-post. 730±200 years old, or 1228 A.D., ±200 years
c. Coufal Site; a village of square houses in Howard County. Sample: burned roof-support post from a house. 820±200 years old, or 1138 A.D., ±200 years		h. Dodd Site (second occupation); a village of long, rectangular houses in Stanley County (Oahe Reservoir). Sample: partly burned wall-post from a house. 800±200 years old, or 1158 A.D., ±200 years
d. Site 25FT18; a small cluster of houses with circular floor areas, in Frontier County (Medicine Creek Reservoir). Sample: charcoal from several posts and other features. 1130±200 years old, or 828 A.D., ±200 years		i Crow Creek Site (first occupation); two long, rectangular houses, in Buffalo County (Fort Randall Reservoir). Sample: charcoal from two roof-support posts in one of the houses. 900±200 years old, or 1058 A.D., ±200 years
e Logan Creek Site; an ancient campsite in Burt County. No houses were found. Sample: charcoal from second level of site fill. 6633±300 years old, or 4674 B.C., ±300 years		j Swanson Site; a village of long, rectangular houses in Brule County (Fort Randall Reservoir). Sample: burned wall-post from one of the houses. 1100±250 years old, or 858 A.D., ±250 years
		k. Breeden Site (first occupation); village of long, rectangular houses in Stanley County (Oahe Reservoir). Sample: charcoal found in a storage pit in a house. 1240±150 years old, or 719 A.D., ±150 years

TABLE 2.—*Specimens processed July 1, 1959–June 30, 1960*

Reservoir	Number of sites	Catalog numbers assigned	Number of specimens processed
MISSOURI BASIN PROJECT			
Big Bend	17	404	1, 357
Fort Randall	1	7	20
Oahe	50	5, 098	43, 437
Sites not in reservoirs	3	9	26
	71	5, 518	44, 840
Collections not assigned site numbers	3	5	5
Total		5, 523	44, 845
CHATTAHOOCHEE BASIN			
Columbia Dam	33	4, 053	30, 161
Walter F. George	282	5, 170	65, 779
Oliver	11	128	2, 968
Sites not in reservoirs	2	83	1, 254
	328	9, 434	100, 162
Collections not assigned site numbers	1	29	138
Total		9, 463	100, 300
Combined totals	399	14, 986	145, 145

TABLE 3.—*Record material processed July 1, 1959–June 30, 1960*

MISSOURI BASIN PROJECT

Reflex copies of records	10, 299
Photographic negatives made	1, 781
Photographic prints made	9, 945
Photographic prints mounted and filed	3, 654
Transparencies mounted in glass	283
Kodachrome pictures taken	454
Plate layouts made for manuscripts	69
Cartographic tracings and draftings	50
Artifacts sketched	44
Plates lettered	37
Profiles drawn	36

in Pierre, S. Dak. This 16½th Plains Conference, now a regular summer event, and an adjunct of the annual autumnal Plains Conferences, was devoted to discussions of basic technical problems arising from current field activities. They centered principally around the sequences of cultural groupings in this area and the interrelationships between the several cultural manifestations represented by excavated materials. During the Thanksgiving weekend, members of the staff participated in the 17th Plains Conference for Archeology, held in Lincoln. On April 23, members of the staff took part in the Seventieth Annual Meeting of the Nebraska Academy of Sciences, held also in Lincoln.

Dr. Robert L. Stephenson, chief, devoted considerable time to managing the office and laboratory in Lincoln and preparing plans and budgets for the 1960 field season. He also worked on a summary report of the Missouri Basin Salvage Program for the calendar years 1952–60, and on a complete revision of a large technical monograph, "The Accokeek Creek Site: A Middle Atlantic Seaboard Culture Sequence," previously accepted as his doctoral dissertation at the University of Michigan. He began preparation of an article, "Administration in Anthropology," and started preliminary analysis of the materials he recovered from the excavations at the Sully site (39SL4) in the Oahe Reservoir in 1956 to 1958. He also continued writing on the manuscript reporting the "Archeological Investigations in the Whitney Reservoir, Texas." Throughout the year he served as chairman of the Missouri Basin Chronology Program. In July he served as chairman of the 16½th Plains Conference held in Pierre, S. Dak., and during the Thanksgiving weekend served as general chairman for the 17th Plains Conference held in Lincoln, Nebr. He was a panel discussant for "The Texas Panhandle and the Southwest" in the session on "Plains–Southwest Relationships," and presented an exhibit of "The History of the Plains Conference" at that meeting. On January 20 and 21, he participated in the annual meeting of the Committee for the Recovery of Archeological Remains, held in Washington, D.C., and on April 23, he attended the Seventieth Annual Meeting of the Nebraska Academy of Sciences in Lincoln, presenting a paper on "A Ceramic Dichotomy" which was published in abstract in the *Proceedings of the Nebraska Academy of Sciences.* During the year he prepared a book review of "The Cougar Mountain Cave," by John Cowles, for publication in *American Antiquity*, and a book review of "Archeology of Coastal North Carolina," by William Haag, for publication in *Ethnohistory.* He also gave nine talks on various aspects of Missouri Basin Salvage Archeology at the regular meetings of local civic organizations and three talks to local school groups in Lincoln. On

March 1, he became assistant editor of *Notes and News in the Plains Area*, for *American Antiquity*, and on April 29, was appointed associate editor for the *Plains Anthropologist.* Taking annual leave, he served as part-time assistant professor of anthropology on the faculty of the University of Nebraska during the second semester of the academic year (February to June) and taught me an upper-division course, "Prehistory of North America."

Dr. Warren W. Caldwell, archeologist, when not in charge of field parties, devoted most of his time to analyses of specimen materials he had recovered from salvage excavations in previous years. He completed preliminary analysis of the ceramics and certain other artifacts from the Black Partizan site (39LM218) which he excavated in the Big Bend Reservoir in 1958. He reanalyzed the artifacts and data from the Hickey Brothers site (39LM4), excavated by Bernard Golden of the Missouri Basin Project staff in 1958, and in collaboration with Lee G. Madison and Bernard Golden completed the final manuscript, including figures and illustrations, "Archeological Investigations at the Hickey Brothers Site (39LM4), Big Bend Reservoir, South Dakota." He reanalyzed the artifacts and stratigraphic data from the Wakemap Mound site (45KL26), and prepared introductory chapters for the final report on the excavations there; completed the final revision of the report, "Archeological Investigations in the Hell's Canyon Area, Snake River, Oregon and Idaho"; revised and completed the manuscripts and illustrations for a popular photographic booklet, "Lewis and Clark Lake," which was published by the Corps of Engineers, U.S. Department of the Army, Omaha, Nebr., in January. In collaboration with Charles H. McNutt and G. Hubert Smith, he contributed chapters to, edited, and completed final revision of a similar popular booklet, "Fort Randall Reservoir." The latter was submitted to the Corps of Engineers in Omaha for publication. He revised three manuscripts of short articles pertaining to firearms in the Plains: "Preliminary Notes on Fragments of Firearms and Related Objects from Fort Atkinson, 1820–1827," "Firearms and Related Materials from Fort Pierre II (39ST217), Oahe Reservoir, South Dakota," and "Comments on the 'English Pattern' Trade Rifle." They were submitted for publication in the *Missouri Archeologist.* Other manuscripts and publications completed by him this year were: "The Black Partizan Site, A Preliminary Anaylsis," accepted for publication in the *Plains Anthropologist;* review of "Stone Age on the Columbia," by Emory Strong, accepted for publication in *Archeology;* review of "Archeological Explorations in Central and South Idaho, 1958," by Earl H. Swanson, Jr., Donald R. Tuohy, and Alan Bryan, accepted for publication in *American Antiquity;* "Pacific Coast Clay Figurines: A Contraview," published in the *Davidson Journal of Anthropology*, vol. 3, No. 2; and a mimeographed statement issued by the Missouri Basin Project, "Missouri Basin Project, Progress Report No. 4." On July 24, he participated in the 16½th Plains Conference in Pierre, S. Dak., and November 26–28 attended the 17th Plains Conference for Archeology in Lincoln, where he served as chairman of the session on "Field Reports" and presented a paper, "Excavations in the Lower Brule-Good Soldier Creek Area, Big Bend Reservoir." On April 23 he presented a paper, "Clay Figurines in the Prehistory of the Northwest," before the Nebraska Academy of Sciences in Lincoln. It was published in abstract in the *Proceedings* of the Academy. During the year he continued to serve as chairman of the dendrochronology section of the Missouri Basin Chronology Program. In February, he accepted appointment as collaborator for the Plains area for *Abstracts of New World Archeology*, and in April accepted appointment as assistant editor for Reviews and Literature for the *Plains Anthropologist*. In March he addressed the Sigma Gamma Epsilon, national earth-sciences honorary, on "The Smithsonian Institution and the Archeological Salvage Program." On annual-leave time, he served as part-time assistant professor of anthropology on the faculty of the University of Nebraska during the second semester of the academic year (February to June) and taught a lower-division course, "The American Indian."

Dr. Charles H. McNutt, archeologist, when not in the field conducting archeological excavations, spent much of his time in studying materials he had obtained in previous seasons and in the preparation of reports on the results of those excavations. He attended and participated in the 16½th Plains Conference in Pierre in July, and the 17th Plains Conference for Archeology in Lincoln in November. At the latter he presented two papers, "The Thomas Riggs Focus, Additional Data" and "Comments on Two Southwestern Pottery Types." In April he attended the Seventieth Annual Meeting of the Nebraska Academy of Sciences and presented a paper, "Comments on Prehistoric Contacts between the Southwestern United States and the Areas to the East." It was published in abstract in the *Proceedings* of the Academy. In September he prepared an article, "The Missouri Basin Chronology Program," which appeared in the *Progress Report* of the Interior Missouri Basin Field Committee for October–December 1959. In January he collaborated with Warren W. Caldwell and G. Hubert Smith in the preparation of a popular photographic booklet, "Fort Randall Reservoir," to be published by the Corps of Engineers, Omaha. Throughout the year he served as chairman of the carbon-14 section of the Missouri Basin Chronology Program. During the course of the year he completed manuscripts on "The Okobojo

Creek Site (39SL9), Oahe Reservoir," "The Ziltener Site (39SL10), Oahe Reservoir," "The Nolz Site (39SL40), Oahe Reservoir," and "The Glasshoff Site (39SL42), Oahe Reservoir." He also completed the final draft of the report, "The C. B. Smith Site (39SL29), Oahe Reservoir." All five of these are now ready for publication. In addition, he compeleted the artifact analyses and portions of the manuscripts of reports of work at the "Sully School Site (39SL7), Oahe Reservoir" and "The Zimmerman Site (39SL41), Oahe Reservoir." On his own time during the second semester of the academic year (February to June), he served as part-time assistant professor of anthropology on the faculty of the University of Nebraska and taught a lower-division course, "World Ethnology." On May 27, he resigned from the River Basin Surveys to accept a teaching position at the University of Tennessee.

William M. Bass III, temporary physical anthropologist, attended and participated in the 16½th Plains Conference in Pierre and after completion of his fieldwork resigned on August 28. During the remainder of the year he devoted much of his own time to study of the data collected in the field and to statistical analyses of the measurements taken on the human skeletal material from the Plains. These data will provide the basis for his doctoral dissertation at the University of Pennsylvania and also for an extensive handbook on the physical anthropology of the Plains Indians.

William N. Irving spent the months of July and August in the Lincoln laboratory completing a first draft of a technical report on his excavations at the Medicine Crow site (39BF2) in the Big Bend Reservoir area. He resigned on September 4 to continue his studies toward a doctorate at the University of Wisconsin.

Dr. Alfred W. Bowers, temporary archeologist, attended and participated in the 16½th Plains Conference in Pierre in July. He resigned on August 28 to return to his regular position as professor of anthropology at the University of Idaho. During the course of the year he devoted a portion of his time to analysis of the archeological materials he had excavated during the past three summers at the Anton Rygh site (39CA4) in the Oahe Reservoir.

Robert W. Neuman, archeologist, when not engaged in field activities, turned his attention to analysis and interpretation of archeological materials from sites he had previously excavated in the Big Bend Reservoir area of South Dakota. He completed a manuscript "The Truman Mound Site (39BF224), Big Bend Reservoir Area, South Dakota" and a brief article on "Representative Porcupine Quill Flatteners from the Central United States," both of which were accepted for publication in *American Antiquity*. He prepared and published a brief article in the *Florida Anthropologist* entitled "Two Unrecorded Pottery Vessels from the Purcell Landing Site, Henry

County, Alabama." He completed the analysis of specimen materials and prepared final drafts of two manuscripts reporting sites he had excavated in the 1958 and 1959 seasons: "The Good Soldier Creek Site (39LM238), Lyman County, South Dakota" and "Two Sites in the Fort Thompson Area, Big Bend Reservoir, South Dakota." The former deals with a stratified site of Plains Woodland occupation overlain by a Mississippian component. The latter reports the investigations at a burial mound site of Plains Woodland context and at a multicomponent village site. In November he attended the 17th Plains Conference for Archeology in Lincoln, and in April he presented a paper, "Burial Patterns in Mounds of the Big Bend Area, Central South Dakota," at the Seventieth Annual Meeting of the Nebraska Academy of Sciences in Lincoln. This paper was published in abstract in the *Proceedings* of the Academy. In March he was elected to full membership in the Society of the Sigma Xi and was initiated in May. At the end of the year he was again in the field in charge of a crew excavating burial mounds in the Oahe Reservoir area.

G. Hubert Smith, archeologist, was on duty at the Lincoln office most of the year. In July he participated in the 16½th Plains Conference in Pierre, and in November he attended the 17th Plains Conference for Archeology in Lincoln, serving as a discussant in a panel forum on "Plains Ethnohistory." He visited the State Historical Society of North Dakota in Bismarck during the period November 9–14 for the purpose of examining and borrowing field notes and specimens pertaining to the large technical manuscript he is preparing on the combined researches at the site of Fort Berthold and Like-a-Fishhook Village (32ML2). The work on this report on four seasons of investigation by three separate State and Federal agencies at this site occupied Mr. Smith the major part of the year. It was about two-thirds completed by June 30, 1960. On April 2, he was lent to the National Park Service at Colonial National Historical Park, Yorktown, Va., where he conducted excavations at the site of an early 18th-century dwelling and completed a comprehensive technical report of the results. In April he contributed a paper, in absentia, on "Historical Archeology in Missouri Basin Reservoir Areas; Current Investigations" for the Twentieth Annual Meeting of the Nebraska Academy of Sciences. It was published in abstract in the *Proceedings* of the Academy and was accepted for publication in its entirety in the *Plains Anthropologist*. As previously mentioned, he collaborated with Caldwell and McNutt in the preparation of a popular booklet on "Fort Randall Reservoir." He wrote a review of "The Indian Journals of Lewis Henry Morgan—1859–1862," edited by Leslie A. White, which was accepted for publication in *Nebraska History*. In March he was elected to full membership in the Society of the Sigma Xi, and initiated, in absentia, in May. He returned to his duties in

Lincoln on June 1 and began preparations for the summer fieldwork. At the end of the year he was conducting investigations in historic sites in the Oahe Reservoir area.

West Virginia.—A survey of the Sutton Reservoir (Cleveland M. Bailey Reservoir) on the Elk River in West Virginia was made during the period October 8–19. With the helpful cooperation of the Corps of Engineers the entire area was covered on foot and by vehicle and no archeological manifestations were found. This was one of the few areas investigated where no further work would be required.

Cooperating institutions.—In addition to the institutions and agencies previously mentioned in the sections pertaining to Alabama–Georgia and Missouri Basin, a number of others cooperated in the Inter-Agency Salvage Program in several areas throughout the United States. The University of Arkansas made an archeological survey in the Beaver Reservoir area on the White River and carried on geological and paleontological investigations in the Greers Ferry Reservoir basin on the Little Red River. The University of Arizona continued its excavations in the Painted Rock project area on the Gila River. The Northern Arizona Museum of Science and Art made additional studies relating to the archeology, geology, flora, and fauna of the Glen Canyon project in the lower Colorado and San Juan Rivers. Southern Illinois University made a series of excavations in the Carlyle Reservoir basin on the Kaskaskia River in Illinois. The University of Kentucky conducted excavations in the Barkley Reservoir area on the Cumberland River and at the Barren No. 2 project on the Barren River. It also conducted a survey of 22 small Federal projects scattered over the State of Kentucky. The University of Missouri carried on investigations in the Joanna Reservoir area on the Salt River in the Upper Mississippi Basin. The Museum of New Mexico again worked in the Navaho project area along the San Juan River. The University of North Carolina conducted surveys and excavations in the Wilkesboro Reservoir area on the Yadkin River. San Francisco State College conducted excavations at the Black Butte project on Stony Creek and in the San Luis Reservoir area above the juncture of San Luis and Cottonwood Creeks in Merced County, California. The University of Oregon continued its series of excavations in the John Day Reservoir area on the John Day River in the Columbia basin. Nevada State Museum made a survey of the Peavine Mountain Water Shed project in Nevada, and Washington State College carried on additional excavations in the Ice Harbor Reservoir area on the Snake River. The University of Texas made surveys in the Proctor Reservoir area on the Brazos River, the Navarro Mills project on Richland Creek, and the proposed reservoir areas on Flat Creek, Farmers' Creek, and Champion Creek. In addition it conducted excavations at the Ferrell's Bridge project on Cypress Creek at the Whitney Reservoir on the Brazos River and in the Diablo Reservoir region along the Rio Grande. It also investigated remains in the Canyon and Iron Bridge project areas. East Texas State College made paleontological surveys in the Iron Bridge area along the Sabine River and the Panhandle–Plains Museum made surveys in the Greenbelt Reservoir area. The University of Utah continued its excavations in the upper portions of the Glen Canyon Reservoir area on the Colorado River.

During the year various local groups and institutions continued to cooperate in the salvage program on a voluntary basis. They were mainly in Pennsylvania, New York State, Ohio, Indiana, Tennessee, and southern California.

ARCHIVES

The Bureau Archives continued during the year under the custody of Mrs. Margaret C. Blaker. On November 14 Mrs. Blaker attended meetings of the American Indian Ethnohistoric Conference in New York City and while returning to Washington she spent three days in Philadelphia examining pictorial and manuscript collections relating to American Indians in the American Philosophical Society Library and in the Historical Society of Pennsylvania.

MANUSCRIPT COLLECTIONS

The Bureau's manuscript collections continue to be utilized by anthropologists and other students. About 285 manuscripts were consulted by searchers, of whom 60 visited the archives in person and 28 purchased reproductions totaling 2,346 pages. Some 350 manuscripts were referred to by the archivist in obtaining information for 90 mail inquiries. In the course of this examination, new and more detailed descriptive lists of manuscripts were also prepared and are available for distribution in response to specific inquiries.

The papers of Alice Cunningham Fletcher and her adopted son, Francis La Flesche, which had been deposited on loan in 1955 by Mrs. G. David Pearlman of Washington, D.C., were donated by Mrs. Pearlman in 1959 in memory of her husband, G. David Pearlman. During the year just ended this collection was arranged and cataloged by Nicholas S. Hopkins, summer intern. The collection occupies 36 boxes. In addition to correspondence and other personal papers of both Fletcher and La Flesche, there is extensive ethnographic material relating to the Omaha, Osage, Pawnee, Dakota, and Nez Perce tribes, with smaller amounts on the Winnebago, the Indians of Alaska, and a number of other North American tribes. Much of this material has not been published, and should be helpful to anyone studying those tribes. A 20-page outline of the subject matter of the collection has been prepared, and further information will be provided on request.

PHOTOGRAPHIC COLLECTIONS

Requests by scholars, publishers, and the general public for ethnographic photographs from the Bureau's collection continue to increase. The year's total of 604 purchase orders and written and personal inquiries concerning photographs is considerably greater than last year's total of 504, and the 1,983 prints distributed during the year through purchase, gift, and exchange represented a marked increase over the 1,208 of the previous year.

As a result of new lists describing specific portions of the photographic collections that are frequently being prepared, much information about available photographs is gradually being distributed, with a corresponding increase in the distribution of photographs. At present about 110 lists have been prepared describing series of photographs relating to individual tribes or subjects. Since these are in typed form only, they are not distributed as complete sets, but copies of the relevant ones are sent in response to specific inquiries.

The Bureau's files of photographs are constantly growing through the generosity and thoughtfulness of interested individuals who either lend their personal collections for copying or present them as gifts. For example, a series of 160 photographic prints relating to the Northern Cheyenne Sun Dances of 1958 and 1959, and to the moving and opening of the Sacred Buffalo Hat bundle in 1958 and 1959, were made from negatives taken and lent by Mrs. Margot Liberty of Birney, Mont. The Bureau's set of prints is available for reference by students, but until 1970 purchase orders for copies will be referred to Mrs. Liberty who retains the negatives.

Arrangements were made by Dr. William C. Sturtevant for borrowing and copying 69 photographs relating to the Florida Seminole taken during the first quarter of the 20th century. They were from the following collections in Florida: Collier Development Corporation, Everglades; the P. K. Yonge Library of Florida History, University of Florida, Gainesville; the Willson-Cantrell Collection, University of Miami Library, Miami; and the personal collections of Frank A. Robinson, Robinson Galleries, Miami; Dr. Charlton W. Tebeau, Miami; and Mrs. M. K. Ashworth, Coral Gables.

Daguerreotypes of Eleazer Williams, Mohawk, and John O'Brien Skenondough, probably an Oneida, made by Mathew Brady in 1853 and owned by the Long Island Historical Society, Brooklyn, New York, were lent for copying through the courtesy of Miss Helen Bolman, librarian of the Society.

Nine photographs relating to various North American Indian tribes and two made by T. H. O'Sullivan in Colombia in 1870 while on the Darien Expedition under Commander Selfridge were lent for copying by James Tubbesing of Winchester, Va.

A collection of 33 photographs relating to St. Francis Mission, Rosebud Agency, South Dakota, and to other Dakota Indian agencies, including portraits of agency personnel, Indian police, students, and agency buildings, were received as a gift from Richard A. Pohrt of Flint, Mich. Eleven photographs by J. N. Choate pertaining to the Carlisle Indian School, Carlisle, Pa., were also donated by Mr. Pohrt.

Nine photographs of Spanish Mission churches in the Southwest and Mexico were donated by George B. Eckhart, Tucson, Ariz.

A large group photograph of a number of Ute Indians who were camping in the Garden of the Gods, Colorado, in 1913 was received as a gift from Dr. Sidney Margolin of Denver, Colo.

An important collection of 312 glass negatives consisting of individual and group portraits of Indian delegates to Washington photographed by C. M. Bell in the period 1874–1890 was purchased from W. T. Boyce of Washington, D.C. Bell's photographic work was well known to his contemporaries, and a cartoon in *Leslie's Weekly* for September 10, 1881, carries the legend, "Photographing an Indian Delegation, in Bell's Studio, for the Government." In recent years, with the exception of a small series of negatives in the Bureau of American Ethnology uncertainly attributed to him (an attribution now confirmed), Bell's Indian photographs have been little known or used, and the whereabouts of his negatives was not known. The plates have not as yet been individually cataloged, but the following tribes are among those represented: Arapaho, Blackfoot, Cheyenne, Chippewa, Comanche, Dakota, Hidatsa, Sauk and Fox, and some of the Plateau tribes.

With the assistance of Kiowa friends and relatives, Dr. Everett R. Rhoades of Oklahoma City, Okla., identified a number of Kiowa portraits in the Bureau files. Father Peter Powell of Chicago, with the aid of John Stands-in-Timber and other Cheyennes, provided identifications and biographical notes on certain Cheyenne photographs. During a visit to the archives William Hall, a Winnebago of Black River Falls, Wis., gave information about a number of Winnebago photographs.

ILLUSTRATIONS

The Bureau's staff artist, E. G. Schumacher, continued to do a wide variety of illustrating for Bureau and other publications of the Smithsonian Institution. In addition, he made text drawings for articles written by staff members on various topics to be issued in local, national, and foreign periodicals. Most of the illustrations were of an archeological nature, although there was a sizable cross section of scientific and technical art material undertaken. Approximately 379 halftone plates were mounted, revised, restored, retouched and/or lettered, 237 text illustrations drawn, and 66 charts, diagrams, and graphs prepared.

EDITORIAL WORK AND PUBLICATIONS

The Bureau's editorial work continued during the year under the immediate direction of Mrs. Eloise B. Edelen. There were issued one Annual Report and five Bulletins, as follows:

Seventy-sixth Annual Report of the Bureau of American Ethnology, 1958–59. ii + 41 pp., 4 pls. 1960.

Bulletin 143, vol. 7. Index to the Handbook of South American Indians. vi + 286 pp. 1959.

Bulletin 172. The story of a Tlingit community: A problem in the relationship between archeological, ethnological, and historical methods, by Frederica de Laguna. x + 254 pp., 11 pls., 18 figs. 1960.

Bulletin 173. Anthropological Papers Nos. 57–62. iii + 498, 61 pls., 37 figs., 2 maps. 1960.

- No. 57. Preceramic and ceramic cultural patterns in northwest Virginia, by C. G. Holland.
- No. 58. An introduction to Plains Apache archeology—the Dismal River Aspect, by James H. Gunnerson.
- No. 59. The use of the atlatl on Lake Patzcuaro, Michoacan, by M. W. Stirling.
- No. 60. A Caroline Islands script, by Saul H. Riesenberg and Shigeru Kaneshiro.
- No. 61. Dakota winter counts as a source of Plains history, by James H. Howard.
- No. 62. Stone tipi rings in north-central Montana and the adjacent portion of Alberta, Canada: Their historical, ethnological, and archeological aspects, by Thomas F. Kehoe.

Bulletin 174. An introduction to Kansas archeology, by Waldo R. Wedel. With description of the skeletal remains from Doniphan and Scott Counties, Kansas, by T. D. Stewart. xvii+723 pp., 97 pls., 109 figs. 1959.

Bulletin 177. Archeological investigations in British Guiana, by Clifford Evans and Betty J. Meggers, xxi+418 pp., 68 pls., 127 figs. 1960.

Publications distributed totaled 31,547, as compared with 27,721 for the fiscal year 1959.

COLLECTIONS

The following collections were made by staff members of the Bureau of American Ethnology or of the River Basin Surveys and transferred to the permanent collections of the department of anthropology and the department of zoology, U.S. National Museum:

FROM BUREAU OF AMERICAN ETHNOLOGY

Acc. No.

228466. 318 items of archeological materials from La Venta, Tabasco, Mexico, collected by Robert F. Heizer, Philip Drucker, and Robert J. Squier in 1955.

228740. 183 items of archeological material from Colville River drainage area, northern Alaska, collected by U.S. Geological Survey members, 1949–1950. Reported and turned over to Ralph S. Solecki for transfer.

228741. 351 items of archeological material from along Kukpowruk and Kokolik Rivers, Alaska, collected by Ralph S. Solecki, 1949.

FROM RIVER BASIN SURVEYS

221942. 5 fresh-water mussels from Hughes County, S. Dak., collected by Richard Wheeler and Harold A. Huscher in 1958.

226498, 228124, 228919, 229853, 229854, 229855, 229856, 229857, 229861, 229862, 230198, 230201, 230203, 230204. Archeological and human skeletal material collected in Oahe Reservoir, Campbell, Stanley, and Sully Counties, S. Dak.

229858, 229859, 229860, 230200. Indian skeletal material from Big Bend Reservoir, Buffalo and Lynn Counties, S. Dak.

230199. Indian skeletal material from Gavins Point Reservoir, Yankton City, S. Dak.

230202. Indian skeletal material from Jamestown Reservoir, Stutsman City, N. Dak.

MISCELLANEOUS

On January 27, 1960, Miss Jean E. Carter was appointed temporarily as museum aide and assigned to the Bureau Archives. She resigned effective May 4, 1960, and on May 23 Mrs. Caroline R. Cohen was appointed for a 3-month period to fill the vacancy. Raymond E. Machoian was also engaged for three months to assist with the cleaning, sorting, and processing of archeological materials excavated at Russell Cave, Alabama.

Dr. John P. Harrington, Dr. A. J. Waring, and Sister Inez Hilger continued as research associates. Dr. M. W. Stirling, also a research associate, continued to use the Bureau laboratory in completing reports on fieldwork undertaken while he was Director of the Bureau.

The following bibliographies and leaflets were issued during the fiscal year:

SIL–65, 2d rev., 10/59: Introductory bibliography on the American Indian. 6 pp.

SIL–230, 9/59: Selected references on American Indian basketry. Compiled by William C. Sturtevant. 7 pp.

SIL–231, 8/59: Bibliography of wild food plants of United States Indians. Prepared by F. R. Irvine. 26 pp.

SIL–234, 10/59: Selected references on North American Indian clothing. Compiled by William C. Sturtevant. 4 pp.

SIL–240, 10/59: Manuscript collection, Bureau of American Ethnology Archives. 1 p.

SIL–242, 11/59: Selected references on federal Indian policy and administration. Compiled by William C. Sturtevant. 10 pp.

A new bibliographic series titled "Smithsonian Anthropological Bibliographies" was inaugurated under the auspices of Dr. William C. Sturtevant of the Bureau staff. This will include bibliographies of varying length and technicality, both areal and topical, in all fields of anthropology, and will be distributed to those requesting it. It is hoped that individuals not affiliated with the Smithsonian Institution who have prepared bibliographies for class use or other purposes which might be of general usefulness will submit them to the Bureau for consideration. No. 1 of the series is "Selected References on the Plains Indians," 36 pages, multilithed, compiled by John C. Ewers. As in other recent Bureau bibliographies, this one includes recordings of music, sources of illustrations, a list of museums where noteworthy Plains Indian collections are on exhibition, an index to the references according to tribe, and an index of the tribes according to State.

An increase of 885 letters over last year brought the total number of inquiries about the American Indians received in the Director's office during the year to 3,644. In addition, staff members received many letters of a semiofficial nature, but these were not officially recorded. Leaflets and other printed materials were sent in answer to many of the inquiries, while information was supplied to others by staff members. More than 13,000 informational items, including printed and typescript articles, bibliographies, and several hundred photographic lists, were sent out in response to requests for such materials. Numerous specimens either brought to the office or sent by mail were identified for owners and data supplied on them.

Respectfully submitted.

FRANK H. H. ROBERTS, JR., *Director.*

DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.

Report on the Astrophysical Observatory

Sir: I have the honor to submit the following report on the operations of the Smithsonian Astrophysical Observatory for the fiscal year ended June 30, 1960:

The Astrophysical Observatory includes two divisions: the Division of Astrophysical Research in Cambridge, for the study of solar and other types of energy impinging on the earth, and the Division of Radiation and Organisms in Washington, for the investigation of radiation as it relates directly or indirectly to biological problems. Shops maintained in Washington, for work in metals, woods, and optical electronics, prepare special equipment for both divisions, and a shop in Cambridge provides high-precision mechanical work. The field station at Table Mountain, Calif., carries out solar observations. Twelve satellite-tracking stations are in operation, in Florida, Hawaii, and New Mexico in the United States, and abroad in Argentina, Australia, Curaçao, India, Iran, Japan, Peru, South Africa, and Spain.

DIVISION OF ASTROPHYSICAL RESEARCH

The Observatory research staff made significant contributions to our knowledge of solar astrophysics, the upper atmosphere, meteors, meteorites, artificial satellites, and space science. The continued refinement of observational techniques and the development of new methods provided valuable data and opened up new areas of astrophysical investigation.

The Observatory continued its close liaison with Harvard College Observatory, the Massachusetts Institute of Technology, and other research centers, with mutual benefit.

Solar astrophysics.—At the Table Mountain station Alfred G. Froiland, using the atmospheric transmission coefficients obtained by Smithsonian work, made gratifying progress in his measurement of the quantity of ozone in the atmosphere and its effects in energizing the upper atmosphere. He is also studying the possibility of measuring the quantity and quality of haze. The availability of a datatron at the California Institute of Technology has broadened and simplified the scope of the investigation. A more precise and consistent method of measurement is resulting.

Dr. Max Krook, continuing his theoretical work, devised a new and more powerful method for determining the structure of nongray atmospheres. Computation by this new procedure of a number of model atmospheres has begun, with the collaboration of Dr. Charles A. Whitney. Dr. Krook continues his investigation of various problems related to the dynamics of ionized gases, the structure of shock fronts in the presence of magnetic fields, and the kinetic theory of gases.

Dr. Whitney continued his study of stellar atmospheres, begun in 1956. Under his supervision, work on the theory of the formation of spectral lines in moving atmospheres is virtually completed. With numerical techniques developed for use with electronic computers, he is constructing first approximations to precise models of stellar atmospheres, and making preliminary calculations concerning their dynamic behavior.

Dr. Robert J. Davis completed a study of the spiral structure of the Milky Way, and the relationship between neutral hydrogen and stellar clusters and associations, by means of the 21-centimeter radiation of neutral hydrogen. His observations confirm the fact that the spiral arms are trailing and indicate that neutral hydrogen is probably concentrated in some stellar aggregates. This work makes a major contribution to our knowledge of galactic structure, and to the study of the dynamics, origin and evolution of stars, stellar clusters, associations, and the galaxy.

Dr. J. Allen Hynek is compiling a revised catalog of stars with composite spectra. In collaboration with Dr. Werner Kirschoff, using the 74-inch reflecting telescope of the Radcliffe Observatory at Pretoria, South Africa, he has obtained a series of 25 spectrograms of a number of stars with composite spectra visible only in the skies of the Southern Hemisphere to add to the catalog.

Dr. Richard E. McCrosky, in collaboration with Dr. William Sinton of the Lowell Observatory, has begun attempts to detect infrared radiation from molecular hydrogen in interstellar space, by use of infrared-sensitive detectors on the 42-inch telescope at the Lowell Observatory.

Dr. Paul W. Hodge began a study to determine the chemical composition, physical characteristics, ages, and distances of selected nearby galaxies. The work requires exceedingly detailed and accurate photometry of individual stars in the field and in clusters of certain extragalactic nebulae, and will provide evidence on the true distance scale of the universe.

Upper atmosphere.—Dr. Luigi G. Jacchia continued his study of the earth's upper atmosphere, based on analyses of the motion of artificial satellites. This work, at the very frontier of knowledge, has revealed startling new facts concerning solar-terrestrial relationships.

Dr. Jacchia has shown that at heights above 200 kilometers the density of the atmosphere displays a diurnal variation. As the earth rotates, the atmosphere of the bright hemisphere, directly subject to solar radiation, exhibits a pronounced bulge, while that of the night hemisphere cools and contracts. In addition, the density of the entire atmosphere above 200 kilometers fluctuates in response to variations in the 20-cm solar flux, and undergoes transient, relatively rare variations caused by great storms on the sun. Dr. Jacchia has constructed a model atmosphere that accounts for these periodic fluctuations, and has developed a formula that yields the profile of atmospheric density above any point of the earth at any time, given the position of the sun and the value of the 20-cm solar flux.

This work has obvious practical application to geophysics and to space science, and the U.S. Air Force is now partially supporting an expanded program of research.

Dr. Hynek and George J. Nielson continued their balloon experiments in cooperation with the U.S. Air Force, Office of Scientific Research in Washington, D.C., Air Force Cambridge Research Center, and the Massachusetts Institute of Technology Instrumentation Laboratories. They now have scheduled unmanned balloon flights in the late summer, 1960, and plan manned balloon flights at 90,000 feet altitude in the fall of 1960. These flights are designed to determine the amount of image distortion produced by the atmosphere at altitudes between 50,000 and 100,000 feet and to study the use of infrared techniques in stellar photography, and the feasibility of instrumenting and manning astronomical observatories in high-altitude vehicles.

Dr. Hynek and George G. Barton are investigating the possible application of electronic image-converter techniques to astronomy. The preliminary system tests have been completed, and a program begun with the 20-inch Cassegrain telescope at Mount Palomar Observatory will permit comparison of observations made with image orthicon techniques with those made by current photographic techniques.

Dr. A. V. Baez devised a method of obtaining high resolution photographs with short wavelength diffracted and focused by specially constructed Fresnel zone plates. He has also developed a reflecting X-ray "telescope" constructed of an array of crossed plane mirrors which simulate a matrix of collimated pinholes brought to a common focus. He is now working on an advanced version of this device which will use curved instead of plane mirrors. These devices will eventually produce an X-ray telescope for observations in the extreme ultraviolet and soft X-ray regions above the earth's atmosphere.

The Director and Dr. Davis continued the development of a telescope for use in space, the "Celescope." Specifications for the various components were completed, and the contract was awarded to the Aircraft Armaments Corporation, Cockeysville, Md. Preliminary experiments are expected to be launched in an Aerobee-hi rocket early in 1961, and the satellite should orbit in 1962.

This project is of prime importance for the study of stellar and interstellar radiation in the far ultraviolet and soft X-ray regions of the spectrum. It should provide spectrograms, and television pictures, at three wavelengths, of the entire celestial sphere.

Meteoritical studies.—To stimulate interest in essential earth-based meteoritical research, the Director has outlined the most important meteoritical investigations to be carried out in the United States during the next few years, and has evaluated their importance, in a report to the National Academy of Sciences. As President of Subcommission 22 of the International Astronomical Union, he is preparing a report on world-wide meteoritical research.

The Director and Dr. Jacchia completed an analysis of the orbits of 413 meteors photographed simultaneously by two stations with the Super-Schmidt meteor cameras to determine the physical nature of meteors and the distribution of their orbits in space. This work represents the largest amount of precise data yet obtained on meteor orbits and is vital to an understanding of the origin of meteors, their possible interaction with space vehicles, and the nature of comets and the zodiacal light. Analysis indicates that more than 98 percent of all photographic meteors have a fragile structure, are of cometary origin, and are members of the solar system. There is no evidence for an interstellar source for meteors.

In a further analysis of this large amount of photographic material, Dr. Jacchia is studying individual meteors to improve the theory of meteors and to obtain more information on meteor phenomena such as the fragmentation process and coma formation.

Continuing his study of comets, the Director is carrying out theoretical work on the structure of the cometary nucleus, and has nearly completed calculations relating to the distribution of lifetimes of long-period comets. He has derived a law for the frequency distribution of cometary lifetimes. This work contributes significantly to our understanding of the nature and evolution of comets and meteors.

Dr. E. L. Fireman, Dr. Hodge, Dr. Frances W. Wright, Dr. G. Kistner, Hai Chin Rhee, and Kenneth Covey continued the analysis of stratospheric dust collected at high altitudes by aircraft, balloons, and rockets, to determine the nature and quantity of interplanetary matter accreted by the earth. Preliminary results indicate that at heights above 50,000 feet the amount of terrestrial dust is greater than had been supposed, and that the influx of meteoritic particles into the earth's atmosphere is smaller than had been expected. Micrometeoritic dust particles have been chemically analyzed and their composition compared with that of small magnetic particles collected in the vicinity of the Canyon Diablo and Sikhote-Alin meteoritic craters. This research contributes to our understanding of the interplanetary medium.

The electron-probe microanalyzer designed and developed by Dr. F. Behn Riggs, Jr., allows the chemical analysis of a meteorite specimen without destruction of the sample. It is being used to measure the concentrations of iron, nickel, and cobalt in magnetic particles that are assumed to be micrometeorites, ranging in diameter from 50 to 1,000 microns. Particles of similar appearance are found to show a wide range of chemical content. Nickel concentrations up to 5 percent have been found in most of the particles analyzed. This research will provide more information on the history and mode of formation of meteorites.

Dr. Riggs designed and built a simple, hand-operated, scanning spectrometer which makes it possible to measure the elements in the surface of a sample more rapidly than with fixed-channel spectrometers.

Jerald P. Annese, with Dr. D. W. Batteau (formerly at Harvard University), designed and developed an emission-current regulating system for the electron-probe microanalyzer, which increases the accuracy of the analyzer.

Dr. Fireman is continuing his measurement of radioactive isotopes in meteorites. The resulting data provide basic information on the distribution, intensity, and constancy of cosmic rays in space, and indicate the probable age and original mass of specific meteorites found on earth. The time of solidification and the composition of the primordial gas in meteorites are important problems in the history of the solar system. By radiochemical methods, Dr. Fireman completed the measurements on the Aroos and Bruderheim meteorites, and has derived an estimate of the potassium-argon age of the Canyon Diablo meteorite. To increase the value of these techniques, Dr. Fireman has urged the establishment of a large-scale program for the discovery of freshly fallen meteorites.

Dr. Richard E. McCrosky began plans for implementing such a program, to locate and recover meteorites as soon as possible after their fall, by photographing meteors in flight and analyzing the photographic records to find the place of fall. The program will also augment our knowledge of the numbers, masses, and orbits of meteors.

In collaboration with scientists of the Harvard College Observatory, the U.S. Air Force, the Lincoln Laboratories of the Massachusetts Institute of Technology, and the New Mexico College of Agriculture and Mechanic Arts, Dr. McCrosky began experiments with artificial meteors. Plans include the injection into the atmosphere, at meteoric velocities, of bodies of sufficient and known size to reproduce the meteor phenomenon. The work should help calibrate the mass-luminosity scale of natural meteors.

Dr. McCrosky, in collaboration with Mrs. Annette Posen, completed a program begun at Harvard College Observatory to determine the distribution of meteoric material in the solar system, and its correlation with comets. The analysis of the orbits of some 2,500 photographic meteors strongly suggested new correlations between the orbits of comets in general and those of meteors in general.

Satellite-tracking program.—The network of 12 satellite-tracking camera stations, under the supervision of the Director, assisted by Jack Slowey, astronomer, John Grady, operations officer, and J. Aubrey Stinnett, engineer, supplied to the Cambridge headquarters some 13,000 photographs of the artificial satellites. Refined techniques have made possible the better alignment of camera with satellite. Using the Henize-Moore tracking tables, Mr. Grady developed techniques by which the camera can track a satellite for 5,000 miles of its passage, almost 30 minutes of continuous photography. In August 1959, the camera at the station at Woomera, Australia, successfully photographed the Satellite 1959 δ 2 (Explorer VI) at a distance of 14,000 miles.

The Moonwatch program continued under the supervision of Leon Campbell, Jr. Moonwatch teams have now transmitted more than 16,000 observations to Cambridge headquarters. These constitute basic data for correcting ephemerides and for acquiring and reacquiring non-broadcasting satellites. During the year, Moonwatch teams were able to relocate the "lost" Satellite 1958 Epsilon. Their observations made valuable contributions to studies of the Russian Sputnik III and the many pieces into which it disintegrated upon the separation of the "chamber" from the rocket assembly. Moonwatch now comprises 137 teams in various parts of the world.

Under the supervision of Dr. Karoly Lassovszky, the Photoreduction Center in Cambridge processed the 13,000 films received from the tracking stations; 8,705 contained images suitable for preliminary field determinations of satellite position, and of these some 3,700 images were found suitable for precise measurement and analysis.

Under the supervision of Dr. Whitney, the Research and Analysis Division in Cambridge continued to derive precise orbits from optical and radio data. The Differential Orbit Improvement program devised by Dr. George Veis proved highly valuable for this work.

Space science.—Dr. Whitney made a detailed theoretical study of the tumbling of Explorer IV by numerical integration of the gravitationel forces on the satellite. He also carried out theoretical studies of the thermal balance and nighttime cooling of the ionosphere.

Dr. Yoshihide Kozai investigated the effects of solar radiation on the motion of earth satellites, and derived general mathematical expressions for the variations of orbital elements of a close earth satellite moving under the gravitational field of the earth. He has derived numerical values for the amplitudes of the second, third, fourth, and fifth harmonics of the earth's gravity field and has begun work to derive the coefficients of the tesseral harmonics.

Dr. Don A. Lautman completed work on the determination of the orbit of Satellite 1958 Epsilon during the lifetime of its telemetry and during its entire lifetime; the orbit is more precise by an order of magnitude than previous orbits. He has also found the effects on the orbit of the third harmonic in the earth's potential.

Imre G. Izsak is developing a method of orbit determination from simultaneous Doppler-shift measurements from three photographic tracking stations. With this method good orbits can be determined from a single passage, regardless of the weather. From Baker-Nunn and radio data he determined definitive elements for an 80-day period in the lifetime of Satellite 1958 Gamma (Explorer III). By application of Jacobi's elliptic functions, Mr. Izsak seeks to obtain a solution to Vinti's dynamical problem, which is closely related to the perturbations caused by the earth's flattening.

Rajendra C. Nigam has studied the orbits of Satellites 1959 $\alpha 1$ and $\alpha 2$. He has also completed a reanalysis of the orbit of Satellite 1958 Zeta; this work has particular value because of the short lifetime and low elevation of the satellite.

Dr. Pedro E. Zadunaisky began an analysis to determine the orientation of satellites by comparing the drag perturbations on nonspherical satellites with those on spherical satellites. This work will amplify our knowledge of atmospheric densities and the motion of a satellite around its center of gravity.

The measurement of the earth's albedo and a study of its possible correlation with meteorological phenomena have continued under the supervision of Dr. Gustav A. Bakos. An analysis of results obtained in 1958 has begun.

The Communications Center, under the supervision of Charles M. Peterson, continues to clear an average of 500,000 words per month. About 90 percent of the messages sent and received contained satellite observations, predictions, and orbital elements.

At two joint communications meetings held by the Smithsonian Astrophysical Observatory, the National Aeronautics and Space Administration, and the National Space Surveillance Control, steps were taken to eliminate duplication of transmission of satellite information. Teletype distribution lists were exchanged and areas of responsibility were determined.

PUBLICATIONS

Publications of the Smithsonian Contributions to Astrophysics included numbers 6 through 9 of volume 3, number 1 of volume 4, and numbers 1 to 3 of volume 5. The following papers by staff members of the Astrophysical Observatory appeared in various journals:

BAEZ, A. V. Graphical derivation of the inverse square law of gravitation from an elliptical orbit and Kepler's law of areas. Amer. Journ. Phys., vol. 28, p. 254, 1960.

BAKOS, G. A. The color-magnitude diagram of visual binaries (abstract). Astron. Journ., vol. 64, pp. 323–324, 1959.

FECHTIG, H., GENTNER, W., and KISTNER, G. Räumliche Verteilung der Edelgasisotope im Eisenmeteoriten Treysa. Geochim. et Cosmochim. Acta, vol. 18, pp. 72–80, 1960.

FIREMAN, E. L. A program for collecting meteorites. Science, vol. 131, pp. 1824–1831, 1960.

FIREMAN, E. L., and DEFELICE, J. Argon-39 and tritium in meteorites. Geochim. et Cosmochim. Acta, vol. 18, pp. 183–192, 1960.

———. Argon radioactivity in a recently fallen meteorite—a deep-space probe for cosmic rays (abstract). Trans. Amer. Geophys. Union, vol. 41, p. 337.

HYNEK, J. A. Occultation of the bright star Regulus by Venus. Science, vol. 130, pp. 707–709, 1959.

HYNEK, J. A., and STANGER, P. C. The composite-spectrum star 5 Lacertae. Publ. Astron. Soc. Pacific, vol. 71, pp. 310-315, 1959.

JACCHIA, L. G. Corpuscular radiation and the secular acceleration of satellites (abstract). Astron. Journ., vol. 64, p. 335, 1959.

———. Individual characteristics of meteor families (abstract). Astron. Journ., vol. 65, p. 53, 1960.

———. Letter to editor. Sky and Telescope, vol. 19, p. 473, 1960.

KOZAI, Y. On the motion of a close earth satellite (abstract). Astron. Journ., vol. 64, p. 337, 1959.

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KROOK, M. Shock fronts in ionized gases. Ann. Phys., vol. 6, p. 188, 1959.

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———. Continuum equations in the dynamics of rarefied gases. Journ. Fluid Mechanics, vol. 6, pp. 523–541, 1959.

STERNE, T. E. Effect of the rotation of a planetary atmosphere upon the orbit of a close satellite. Journ. Amer. Rocket Soc., vol. 29, pp. 777–782, 1959.

VEIS, G. Geodetic uses of artificial satellites. Smithsonian Contr. Astrophys., vol. 3, 95–161, 1960.

WHIPPLE, F. L. Solid particles in the solar system. Journ. Geophys. Res., vol. 64, pp. 1653–1654, 1959.

———. Fundamental problems in predicting positions of artificial satellites. Proc. Symp. Applied Math., vol. 9, pp. 36–47, 1959.

———. Meteoritic material in space. *In* "Physics and Medicine of the Atmosphere and Space," edited by O. O. Benson, Jr., and H. Strughold, pp. 48–59, 1960.

———. Sub-commission 22a, Report on meteorites. Trans. Intern. Astr. Union, vol. 10, pp. 345–353, 1960.

———. Notes on the immediate feasibility of an orbiting astronomical telescope. IX International Astronautical Congress, 1958, Springer Verlag, pp. 92–95.

WHITNEY, C. A. Stellar Thermopauses Mem. Soc. Roy. Sci. Liège, ser. 5, vol. 3, 1959.

WRIGHT, F. W., JACCHIA, L. G., and BOEHM, B. W. Photographic Lyrid meteors (abstract). Astron. Journ., vol. 64, p. 349, 1959.

———. Photographic Lyrid meteors. Astron. Journ., vol. 65, pp. 40–45, 1960..

The Special Reports of the Astrophysical Observatory distribute catalogs of satellite observations, orbital data, and preliminary results of data analysis prior to journal publication. Nos. 28 through 44, issued during the year, contain the following material:

Special Report No. 28, Sept. 16, 1959.
  Catalogue of satellite observations for May and June, 1959, by R. G. Albert.
  The orbits of Satellites 1958 Alpha, 1958 $\beta 1$, 1958 $\beta 2$, 1958 $\delta 2$, 1959 $\alpha 1$, 1959 $\alpha 2$, by G. Veis.

Special Report No. 29, Sept. 21, 1959.
  Solar effects on the acceleration of artificial satellites, by L. G. Jacchia.

Special Report No. 30, Nov. 12, 1959.
  Anticipated orbital perturbations of Satellite 1959 $\delta 2$, by Y. Kozai and C. A. Whitney.
  A table of the times of perigee passage for Satellite 1958 $\beta 2$, by R. E. Briggs.
  Note on the secular motions of the node and perigee of an artificial satellite, by Y. Kozai.

Special Report No. 31, Jan. 18, 1960.
  Catalogue of observations of Satellites 1958 $\alpha 1$, 1958 $\beta 1$, and 1958 $\beta 2$, for July and August, 1959, prepared by R. G. Albert.
  Osculating elements, by Y. Kozai.

Special Report No. 32, Jan. 29, 1960.
  Catalogue of observations of Satellite 1958 $\delta 2$ for July, 1959, prepared by R. G. Albert.

Special Report No. 33, Feb. 1, 1960.
  On the effects of image motion on the accuracy of measurement of a flashing satellite, by J. A. Hynek.

Special Report No. 34 (C–8), Feb. 2, 1960.
  Catalogue of observations of Satellite 1958 $\delta 2$ for the period through Aug. 22, 1959, prepared by R. G. Albert.

Special Report No. 35 (C–9), Feb. 5, 1960.
  Catalogue of observations of Satellite 1958 $\delta 2$ for the period Aug. 23 through Aug. 31, 1959, prepared by R. G. Albert.

Special Report No. 36 (C–10), Feb. 8, 1960.
  Catalogue of additional observations of Satellite $\delta 2$ for the period from May 1 through May 29, 1959, prepared by R. G. Albert.

Special Report No. 37 (C–11), Feb. 10, 1960.
  Catalogue of observations of Satellites 1958 $\delta 2$, 1958 Epsilon, and 1958 Zeta, prepared by R. G. Albert.

Special Report No. 38, Jan. 15, 1960.
  Orbit determination from simultaneous Doppler-shift measurements, by I. G. Izsak.
Special Report No. 39, March 30, 1960.
  A variable atmospheric-density model from satellite accelerations, by L. G. Jacchia.
Special Report No. 40, May 24, 1960.
  Orbital elements for July and August, 1959, for Satellite 1958 Alpha, by B. Miller; for Satellite 1958 $\beta 1$, by C. A. Martin; for Satellite 1958 $\delta 2$, by Y. Kozai; for Satellites, 1959 $\alpha 1$ and $\alpha 2$, by R. C. Nigam; for Satellite 1958 Gamma, by I. G. Izsak.
  Relative positions of the sun and perigee of an artificial earth satellite, by P. E. Zadunaisky.
Special Report No. 41, May 24, 1960.
  The catalogue of precise satellite positions, by K. Lassovszky.
  Preliminary time reduction for the determination of precise satellite positions, by E. Weston.
  The star chart project, by P. A. Pardue.
  Explanation of codes used in the catalogue, by E. P. Bullis.
  Shutter correction in time for the Baker-Nunn camera, by P. E. Zadunaisky.
Special Report No. 42 (C–12), May 24, 1960.
  Catalogue of satellite observations for the period Sept. 1 through Dec. 31, 1959, prepared by D. V. Mechau.
Special Report No. 43 (C–13), May 25, 1960.
  Catalogue of satellite observations for the period July 1 through Dec. 31, 1959, prepared by D. V. Mechau.
Special Report No. 44 (C–14), May 25, 1960.
  Catalogue of satellite observations, prepared by D. V. Mechau.

OTHER ACTIVITIES

Members of the staff presented papers at meetings of the American Astronomical Society, the American Physical Society, the American Geophysical Union, the National Telemetering Conference, the American Meteorological Society, the American Astronautical Society, the American Philosophical Society, the Optical Society of America, the International Association of Geodesy, the Institute of Aeronautical Sciences, and the National Aeronautics and Space Administration.

The Director and Dr. Jacchia presented papers to the Institute of Aeronautical Sciences in New York. Dr. Krook participated in the International Symposium on Fluid Dynamics of the Ionosphere held at Cornell University. Dr. Hynek led the Astrophysical Observatory's expedition to Spain to observe the occultation of the star Regulus by the planet Venus. George J. Nielson led an airborne expedition to observe the solar eclipse of October, 1960. Dr. Lautman attended a conference of the Geodesy Committee of the Space Science Board of the National Academy of Sciences. He also represented the Smithsonian Institution at the First Interspace Science Symposium held in Nice, January 9–15, 1960. Dr. Whitney presented a paper at the Advanced Research Projects Agency symposium in

Florida, and at the International Symposium on Astrophysics, Liège, Belgium. Dr. Whitney, Carl W. Tillinghast and Charles E. Moore attended a symposium on orbital computation held at the Jet Propulsion Laboratory of the University of California Institute of Technology. In March, the Director attended the meetings of the Panel on Science and Technology with the Committe on Science and Astronautics, held at the House of Representatives in Washington. Dr. Bakos attended the General Assembly of the Royal Astronomical Society of Canada. Mr. Peterson attended a joint conference held by the Smithsonian Institution, the National Aeronautics and Space Administration, and the National Space Surveillance Control, in Washington, May 15 to 21, 1960. Dr. Hodge was present at the meetings of the American Association for the Advancement of Science and the Astronomical Society of the Pacific held concurrently in Oregon, June 13–15, 1960. Dr. Fireman attended a special meeting of the National Academy of Sciences held in Highland Park, Ill., June 19–22, 1960.

CHANGES IN STAFF

Dr. Theodore E. Sterne accepted a position at the Johns Hopkins University, Office of Operations Research. He left the Observatory during the summer of 1959.

Dr. Karl G. Henize resigned to join the staff of the Dearborn Observatory, Northwestern University.

Dr. J. Allen Hynek accepted the position of Head of the Department of Astronomy and Director of the Dearborn Observatory, Northwestern University, and will leave the Observatory in the summer of 1960.

As of June 30, 1960, 265 persons were employed at the Observatory.

BUILDINGS AND EQUIPMENT

The Astrophysical Observatory occupies space in six separate leased buildings. Construction of Harvard University's new Space Science Building on the grounds of the Harvard College Observatory has advanced rapidly, and it is expected that Astrophysical Observatory offices will occupy the building under lease in December 1960.

DIVISION OF RADIATION AND ORGANISMS

The Division continued its research in the field of photobiology, using the techniques of biochemistry, biophysics, and plant physiology. Particular emphasis was placed on understanding the cellular and subcellular mechanisms involved in photomorphogenesis and phototropism and how these responses are mediated by radiant energy.

Oxidative phosphorylation is the process by which energy is made available for growth of etiolated plant tissue. Investigations were undertaken to determine the effects of radiant energy on this system by assaying for high-energy phosphate after treatment with red and far-red energy. The adenosine triphosphate (ATP) content was assayed utilizing a luciferin-luciferase method, and the nucleotide phosphate by absorption on activated charcoal and by the uptake of radioactive phosphorus. Red, far-red irradiation did not significantly alter the ATP level in hypocotyl hook tissue, but the light treatment produced a marked photomorphogenic response as compared to dark controls. When growth of bean hypocotyls was inhibited 40 percent by dinitrophenol, the ATP level was also found to be reduced by the same amount. Thus, it is indicated, although over-all growth response is dependent on ATP, the ATP alone is not the controlling factor in influencing photomorphogenic responses.

The effect of inhibitors of protein synthesis on chlorophyll formation and the relationship of protein synthesis to the red, far-red regulation of photomorphogenesis have been studied. Previous work with bean plants has shown that, after the initial conversion of protochlorophyll to chlorophyll, the rate of chlorophyll synthesis does not reach a maximum until after at least 4 hours of continuous irradiation. This lag period can be considerably shortened if leaves are irradiated briefly and incubated overnight in the dark before being subjected to continuous irradiation. Chloramphenicol has been found to abolish the stimulatory effect of light pretreatment. Unlike nontreated leaves, chloramphenicol-treated leaves do not show an increase in rate of chlorophyll synthesis upon extended continuous irradiation. P-fluorophenylalanine and 6-azauracil appear to affect chlorophyll synthesis similarly.

Although chloramphenicol inhibits the light-induced increase in the capacity to synthesize chlorophyll, other photomorphogenic responses of the bean plant apparently are not inhibited. Leaves irradiated in the presence of chloramphenicol accumulate considerable quantities of chlorophyll. Nevertheless, they have not the capacity to photosynthesize. Chloramphenicol does not affect the photosynthetic ability of leaves greened in its absence. It has been confirmed that radiant energy (700–1100 mμ) which is not effective in promoting chlorophyll formation can induce the formation of the photosynthetic enzyme, TPN-linked glyceraldehyde-3-phosphate dehydrogenase. Another photosynthetic enzyme, photosynthetic pyridine nucleotide reductase, seems to be similarly affected.

Previous studies indicated that the lag phase of chlorophyll synthesis could be lengthened by irradiation with X-rays of 5 to 10 kiloroentgens and that subsequent exposure to 10 minutes of white light initiated recovery of the chlorophyll-synthesizing mechanism. A similarity of response between exposure to X-rays and gamma rays has been established, as well as a similarity of response by monocotyledonous and dicotyledonous leaf tissue. A maximal effect on chlorophyll synthesis lag phase is obtained with dosages of 14 kiloroentgens. Experiments in which fresh sucrose solution is supplied to the tissues subsequent to the X-irradiation indicated that X-rays do not affect chlorophyll synthesis by means of their action on carbohydrate substrates. Results of exposure to red or blue broad band radiation indicate that red is effective to a greater degree than blue. These data imply that there is not a reversal of ionizing radiation effects, but rather a photomorphogenic response superimposed on the damaging effects of X-irradiation.

Action spectra of the light-induced and light-inhibited germination of seeds of *Arabidopsis thaliana* have been completed. Except for a slight shift of about 10 mμ toward longer wavelengths of the reversal action spectrum, the action spectra correspond to those determined previously for the bean hypoctyl hook. The action spectrum for germination has a broad maximum at 660 mμ with decreased sensitivity extending through 400 mμ. On the long wavelength side, there is a sharp drop to the isobestic point at 690 mμ. The action spectrum of reversal has a sharp maximum at 720 mμ and a secondary peak at 740 mμ, with little or no activity beyond 780 mμ.

The effects of polarized light on the phototropic and light-growth responses of *Phycomyces* sporangiophores immersed in paraffin oil have been investigated in order to determine whether the photoreceptors in *Phycomyces* are oriented or nonoriented. The effects obtained in paraffin oil are not definitive and the data could fit either possibility. In order to resolve this question, measurements must be made in an immersion fluid which has an index of refraction between 1.6 and 1.7. Numerous such media have been tested, but all have proved toxic to the sporangiophores.

Three new members were added to the research staff of the Division: Dr. Lars Loercher, plant physiologist; Dr. Richard L. Latterell, cytogeneticist; and John L. Edwards, plant physiologist. Dr. Loercher and Mr. Edwards came to the Division from the Agricultural and Mechanical College of Texas, where they were working on photomorphogenic responses as affected by photomimetic substances. Dr. Latterell comes from the Brookhaven National Laboratory, where he was engaged in genetic studies.

The installation of the radioisotope laboratory and counting room was completed, and these are in current use. The greenhouse is in operation, and the control rooms are nearing completion and should be ready for use in the research program by the fall of 1960.

PUBLICATIONS

Klein, William H. Interaction of growth factors with the photoprocess in seedling growth. In "Photoperiodism and Related Phenomena in Plants and Animals." Amer. Assoc. Adv. Sci. Publ. 55, pp. 207–215, 1959.

Moh, C. C., and Withrow, R. B. Non-ionizing radiant energy as an agent in altering the incidence of X-ray-induced chromatid aberrations. III. Action spectrum of far-red potentiation. Radiation Res., vol. 11, pp. 18–23, 1959.

Withrow, Robert B. A kinetic analysis of photoperiodism. In "Photoperiodism and Related Phenomena in Plants and Animals." Amer. Assoc. Adv. Sci. Publ. 55, pp. 439–471, 1959.

Wolff, John B., and Price, Leonard. The effect of sugars on chlorophyll biosynthesis in higher plants. Journ. Biol. Chem., vol. 235, pp. 1603–1608, 1960.

OTHER ACTIVITIES

Dr. W. H. Klein and Dr. W. Shropshire participated in the International Botanical Congress in Montreal, where Dr. Shropshire presented a paper, "Action Spectra of the Light-growth and Tropic Responses of Phycomyces," and Dr. Klein participated in the executive committee sessions of the American Society of Plant Physiologists. Dr. Klein also attended the International Symposium on Growth and Development at Purdue University, and Dr. Shropshire attended the Fourth Annual Meeting of the Biophysical Society at Philadelphia and a symposium at the Johns Hopkins University in Baltimore on the subject "Light and Life."

Dr. E. Sisler, Dr. M. Margulies, L. Price, and V. Elstad attended the meetings of the American Institute of Biological Sciences at Pennsylvania State University, and Drs. Sisler and Margulies attended the annual meetings of the Federation of American Societies for Experimental Biology in Chicago.

Respectfully submitted.

Fred L. Whipple, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on the National Collection of Fine Arts

Sir: I have the honor to submit the following report on the activities of the National Collection of Fine Arts for the fiscal year ended June 30, 1960.

SMITHSONIAN ART COMMISSION

The 37th annual meeting of the Smithsonian Art Commission was held in Washington on Tuesday, December 1, 1959. Members present were Paul Manship, chairman; Robert Woods Bliss, vice chairman; Leonard Carmichael, secretary; Gilmore D. Clarke, David E. Finley, Lloyd Goodrich, Walker Hancock, Bartlett H. Hayes, Jr., Odgen M. Pleissner, Charles H. Sawyer, Stow Wengeroth, and Andrew Wyeth. James C. Bradley, Assistant to the Secretary of the Smithsonian Institution, and Thomas M. Beggs, Director, National Collection of Fine Arts, were also present.

The Commission recommended reappointment of Lloyd Goodrich, Walker Hancock, Bartlett H. Hayes, Jr., and Douglas W. Orr for the usual 4-year period.

The following officers were reelected for the ensuing year: Paul Manship, chairman; Robert Woods Bliss, vice chairman; and Leonard Carmichael, secretary.

The following were reelected members of the executive committee for the ensuing year: David E. Finley, chairman; Robert Woods Bliss, Gilmore D. Clarke, Archibald G. Wenley, with Paul Manship and Leonard Carmichael ex officio.

Mr. Clarke reported that the subcommittee appointed to advise in the development of plans for housing the National Collection of Fine Arts in the Old Patent Office Building consisted of Thomas M. Beggs, Gilmore D. Clarke (chairman), Walker Hancock, Wilmarth S. Lewis, Douglas W. Orr, and Ogden M. Pleissner, with Leonard Carmichael and Paul Manship, ex officio. At a meeting held October 12, 1959, it was pointed out that the building might be transferred in 1963 or 1964, and would be expected to house the National Collection of Fine Arts and a national portrait collection as separate units. Following a tour of the building, it was concluded that it could be adapted to the needs of both collections but that a survey by engineers and architects would be necessary before plans could be drawn for structural changes.

Dr. Carmichael reported that, in accordance with a resolution adopted at the 1958 Smithsonian Art Commission meeting, a committee of the Board of Regents, consisting of Dr. John Nicholas Brown, chairman, Senator J. W. Fulbright, Representative Frank T. Bow, and Dr. Caryl P. Haskins, had been appointed by the Chancellor to assist in the organization of a National Portrait Gallery and to advise in the development of plans for adapting the Old Patent Office Building to the needs of such a gallery.

The Smithsonian Institution has a collection of over 125 subjects designated, since acceptance in 1921 of the gift of 22 paintings from the National Art Committee, as a National Portrait Gallery. The National Gallery of Art has many important portraits of distinguished Americans, and other government departments have portraits appropriate for such a gallery.

The site of the Patent Office Building was prominent in L'Enfant's plan of Washington. Administrative studies were initiated preliminary to the formulation of plans for the use of the building. A study will be made before the next meeting of the Smithsonian Art Commission concerning the authorized functions of the National Collection of Fine Arts and its relationship to other Government galleries.

The Commission conveyed its greetings and hope for his early recovery to A. G. Wenley, Director of the Freer Gallery of Art.

The Commission recommended acceptance of the following objects:

Marble, Seated Nude, by Maurice Sterne (1877–1957). Offered by Lauson H. Stone, New York City (through the National Gallery of Art).

Oil, An Eclogue, by Kenyon Cox (1856–1919). Offered by Allyn Cox, New York City.

Three oil sketches to scale of a mural painting in the Iowa State Capitol by Kenyon Cox. Offered by Allyn Cox.

Two oils, Trapped in a Dungeon of Joy, by Atellio Salemme, and Unknown Subject, by Theodoros Stamos. Offered by the Maritime Administration through the General Services Administration.

Watercolor, James Smithson (1765–1829). Transfer from the Smithsonian Institution.

Fourteen pencil drawings by Kenyon Cox. Offered by Allyn Cox.

Three etchings by Gerald K. Geerlings (1897–): Black Magic (etching and aquatint), Olympus (drypoint), and Inland Island (soft ground etching). Offered by the artist, New Canaan, Conn.

Seventeen fans added to the Pepita Milmore Collection of 18th- and 19th-century French and English fans accepted in 1956. Offered by Henry L. Milmore, Washington, D.C.

THE CATHERINE WALDEN MYER FUND

The following miniatures, watercolor on ivory, were acquired from the fund established through the bequest of the late Catherine Walden Meyer.

No. 114. Unknown Gentleman, by Thomas Flatman (1633/7–1688).
No. 115. John (or Uriah) Vaughan, by Christopher Greiner (–1864).
No. 116. Robert Parker, attributed to Henry Inman (1801–1846).
No. 117. Self Portrait, said to be by Sarah Peale (1800–1885).
No. 118. Self Portrait, said to be by Edward Savage (1761–1817).
No. 119. Unknown Man, by Richard M. Staigg (1820–1881).
No. 120. Nance de Villers, by Carolyn D. Tyler.
No. 121. Miss Mary Angell, by Carolyn D. Tyler.
No. 122. Elizabeth Moore, by Carolyn D. Tyler.
No. 123. Unknown Man, by Undetermined Artist.
[Nos. 114 through 123 were acquired from Mrs. Ruel P. Tolman through Edward Kemper, Washington, D.C.]
No. 124. Joseph Enderlin, by Luise Walther.
No. 125. Mrs. George Willig by Luise Walther.
[Nos. 124 and 125 were acquired from the Corcoran Gallery of Art, Washington, D.C.]
No. 126. India ink portrait of a lady, by Foster, from Mrs. Mabel Munson Swan, Barrington, R.I.

ART WORKS LENT AND RETURNED

Institutions	*Loans*	*Loans Returned*
American Federation of Arts	1	
Atomic Energy Commission	4	
Barney Neighborhood House		15
B'nai B'rith	1	1
Budget Department	8	8
Corcoran Gallery of Art	6	6
Federal Communications Commission	12	1
Federal Power Commission	4	4
General Services Administration	4	
George Washington University	1	1
Interstate Commerce Commission	8	7
Internal Revenue	4	4
Knoedler Gallery	1	1
Meltzer Gallery	23	1
Marion Koogler McNay Art Institute	1	1
Post Office Department	6	
Senate Rules Committee	1	1
State Department	7	1
District Court	6	
U.S. Military Court Appeals	2	1
U.S. Supreme Court	2	
White House	4	
Whitney Museum	1	
	107	53

SMITHSONIAN LENDING COLLECTION

The following 11 oils by Emile Walters were added December 1, 1959:

Haukadal, North Iceland (looking west), site of the home of Eric the Red, where Leif Ericsson was born.

Haukadal (looking east).

Hrappsey (Island Group where Eric the Red sheltered his ship prior to his first voyage to Greenland).

Glumbaer, Skaga Fjord (home of Vinland hero, Thorfinns Karlsefni, purchased after his return to Iceland from Vinland in 1006).

View from the Plains of Parliament.

Herolsness Fjord (Ikagait Mountain home of the first Viking settlement).

Early Sunshine (Erics Fjord, southern Greenland).

Church at Hvalsejar Fjord (first Christian Church in the west).

Erics Fjord (glacier ice in summer).

Erics Fjord (across from Brattahild).

Hjaraqssuiit (second Viking settlement in Greenland).

An oil, Marie Huet, by Alice Pike Barney, lent September 25, 1952, to the Department of Justice, was recalled for renovation.

The following paintings were lent for varying periods:

To the Internal Revenue Service, Washington, D.C.:
April 21, 1960------------------------ Little Rose by S. Seymour Thomas.
To the Department of State, Washington, D.C.:
March 18, 1960------------------- Woman with Red Hair by Albert Herter.

THE HENRY WARD RANGER FUND

The following paintings, purchased previously but not assigned, have been allocated to the institutions indicated:

Title and Artist	*Assignment*
213. The Critic (Kermit Lansner, by Aaron Shikler (1922–).	Mint Museum of Art, Charlotte, N.C.
217. The Painter, Shelley Fink, by David Levine (1926–).	University of Oregon, Eugene, Oreg.

According to a provision in the Henry Ward Ranger bequest, that paintings purchased by the Council of the National Academy of Design from the fund provided by the Bequest, and assigned to American art institutions, may be claimed during the 5-year period beginning 10 years after the death of the artist represented, the following paintings were recalled for action of the Smithsonian Art Commission at its meeting December 1, 1959.

No. 2, Evening Tide, California, by William Ritschel, N.A. (1864–1949), assigned to the National Collection of Fine Arts (formerly the National Gallery of Art) was accepted to become a permanent accession.

No. 29, Smuggler's Notch, Stowe, Vermont, by Chauncey F. Ryder, N.A. (1868–1949, assigned to the Memorial Art Gallery, University of Rochester, N.Y., was accepted to become a permanent accession.

No. 52, The Enchanted Pool by William Ritschel, N.A. (1864–1949), assigned to the Minneapolis Society of Fine Arts, Minneapolis, Minn., was accepted to become a permanent accession.

The following paintings, purchased by the Council of the National Academy of Design since the last report, have been assigned as follows:

Title and Artist	*Assignment*
226. Blue Marine, by Henry E. Mattson, N. A. (1887–).	North Carolina Museum of Art, Raleigh, N.C.
227. Michigan Landscape, by Louis Ritman, N. A. (1889–).	Brooks Memorial Art Gallery, Memphis, Tenn.
228. Sag Harbor, by Nicolai Cikovsky (1894–).	(Assignment pending.)
229. Still Life Epilogue, by Luigi Lucioni, N. A. (1900–).	Telfair Academy of Arts and Sciences. Savannah, Ga.
230. The Bridge (watercolor), by Hardie Gramatky, N. A. (1907–).	(Assignment pending.)
231. Dead Boats, Wellfleet (watercolor), by Thomas Sgouros (1927–).	Jacksonville Art Museum, Jacksonville, Fla.
232. High September Tide (watercolor), by Norman Kenyon (1901–).	(Assignment pending.)
233. Razing the Old New York Post Office, by Ernest Fiene, N. A. (1894–).	Museum of the City of New York, New York, N.Y.

SMITHSONIAN TRAVELING EXHIBITION SERVICE

In addition to the 54 exhibits held over from previous years as indicated, 37 new shows were introduced. The total of 89 of these were circulated to 246 museums in the United States, two having been prepared for circulation abroad.

EXHIBITS CONTINUED FROM PRIOR YEARS

1955–1956: Japan I by Werner Bischof; and Chinese Ivories from the Collection of Sir Victor Sassoon.

1956–1957: Contemporary German Prints; Architectural Photograph II; Six Japanese Painters; Japan II by Werner Bischof; and The World of Edward Weston.

1957–1958: The American City in the 19th Century; Recent American Prints; Japanese Woodblock Prints; Theatrical Posters of the Gay Nineties; Birds by Emerson Tuttle; 100 Years of American Architecture; Contemporary Portuguese Architecture; National Ceramic Exhibition, Sixth Miami Annual; Fulbright Designers; Nylon Rug Designs; Religious Banners; Burmese Embroideries; Japanese Dolls; Thai Painting; The Anatomy of Nature; Photographs of Sarawak; Glimpses of Switzerland; Art in Opera II—Carmen; The Four Seasons; and Children's Paintings from Morocco.

1958–1959: Young British Painters; German Artists of Today; Recent Work by Peter Takal; Advertising in 19th Century America; The Engravings of Pieter Brueghel the Elder; Three Danish Printmakers; Great European Printmakers; Charles Fendrich—Lithographer of American Statesmen; Drawings from Latin America; Contemporary Religious Prints from the Sloniker Collection; Religious Subjects in Modern Graphic Arts; UNESCO Watercolor

Reproductions; British Artist-Craftsmen; Contemporary Finnish Rugs; Contemporary Tapestries; Contemporary Indian Crafts; Stone Rubbings from Angkor Wat; Shaker Craftmanship; the Unguarded Moment, Photographs by Erich Salomon; Children's Paintings from India; A Child Looks at the Museum; and Swiss Children's Paintings.

EXHIBITIONS INITIATED IN 1960

Paintings and Drawings

Title	*Source*
20th Century American Paintings	Edward W. Root Collection from the Munson-Williams-Proctor Institute, Utica, N.Y.
Contemporary American Watercolors and Drawings	Do.
The Art of Seth Eastman	Prof. John Francis McDermott; private collectors.
Contemporary Greek Painting	Artists; Greek Embassy.
Early Drawings by Toulouse-Lautrec	Albert H. Wiggin Collection; Arthur W. Heintzelman, Boston Public Library.
Watercolors and Drawings by Thomas Rowlandson	Do.
Prints and Drawings by Jacques Villon	Do.

Graphic Arts

American Prints Today	Print Council of America; Artists.
Brazilian Printmakers	Artists; Brazilian Embassy; Organization of American States.
Lithographs of Fantin-Latour	Albert H. Wiggin Collection; Arthur W. Heintzelman, Boston Public Library.
Drawings from Latin America	Visual Arts Section, Pan American Union; Artists; Collectors.
Arts and Cultural Centers	American Institute of Architects.
Bernard Ralp Maybeck	University of California; College of Architecture; California Palace of the Legion of Honor; California Redwood Association.

Design

Enamels	Museum of Contemporary Crafts, N.Y.; Artists.
Eskimo Art	Eskimo Art, Inc., Ann Arbor, Mich.; Canadian Embassy.
Contemporary French Tapestries II	Association des Peintres-Cortenniers de Tapiseries, Paris; l'Association Française d'Action Artistique; French Ambassador; Artists.
Greek Costumes and Embroideries	Benaki Museum in Athens; Greek Embassy.
Contemporary American Glass	Corning Museum of Glass, Corning, N.Y.

Title	*Source*
Story of American Glass	Corning Museum of Glass, Corning, N.Y.
Midwest Designer Craftsmen	Designers and Craftsmen; Joslyn Art Museum.
Norwegian Tapestries	Historical Museum, Bergen University; West Norway Museum of Applied Arts, Bergen; Rohsska Museum of Applied Arts, Goteborg, Sweden; Sandvig Collection, Folk Museum, Lillehammer; Norwegian Folk Museum, Oslo; Oslo Museum of Applied Arts, Trondheim, Thorvald Krohn-Hansen, Director; Thor Furuholmen, Oslo.
	Oriental Art
Bazaar Paintings from Calcutta	Victoria and Albert Museum, London; Wadsworth Atheneum, Hartford, Conn.; W. G. Archer, Victoria and Albert Museum.
Gandhara Sculpture	Government of Pakistan; Pakistan Committee of Asia Society; Embassy of Pakistan; Consul General of Pakistan, New York City; Prof. Benjamin Rowland of Fogg Museum, Harvard University.
	Folk Art
Rumanian Folk Art	East-West Cultural Exchange Program, Department of State; Rumanian Embassy.
Sardinian Crafts	Institute of Sardinian Crafts; Dr. Francesco Deriu, Museum of Sarrari; Italian Government; Embassy of Italy.
	Photography
Arctic Riviera	Swiss Foundation for Alpine Research; Museum of Science, Boston.
Image of America I	Library of Congress.
Photographs of Robert Capa II	Magnum Photos, Inc., New York.
Outer Mongolia	Asia Society, New York.
Pagan	Asia Society, New York.
Portraits of Greatness	George Eastman House, Rochester, N.Y.
	Children's Exhibitions
Contrasts	Embassy of Union of South Africa.
Paintings by Young Africans	San Francisco Museum of Art, Dr. Grace Morley.

INFORMATION SERVICE AND STAFF ACTIVITIES

In addition to the 15,414 requests for information received by mail and telephone, inquiries made in person at the office numbered 1,444. In all, 250 works of art were examined, 174 of this number submitted at the office, 76 examined by the Director during field trips.

Special catalogs were published for the following traveling exhibitions: Contemporary Greek Painting, Prints by Munakata, Photographs by Robert Capa, Gandhara Sculpture, The Art of Seth Eastman, Old Master Drawings, Norwegian Tapestries, Greek Costumes and Embroideries. A special catalog of Traveling Exhibitions for 1960–61 was also published.

The Director lectured on the "Treasures in the Gellatly Collection," "Pending Legislation Regarding Art," and "The Passion Story in Washington Pictures."

Mrs. Pope visited England and several European countries to consult with government officials, museum directors, and collectors concerning new displays for the Traveling Exhibition Service.

Rowland Lyon served as juror for a number of art exhibitions.

Nineteen paintings in oil on canvas from the permanent collections were cleaned and revarnished, and 28 picture frames were repaired and refinished with the assistance of Buildings Management Service. New frames were constructed and finished for seventeen etchings. An oil, Thomas Watt Gregory of Texas, was cleaned and revarnished for the Department of Justice.

Two oil paintings, The Three Trees by William Lathrop, and Fishing Boats at Gloucester by John Henry Twachtman, were restored by Walter Frobos, Athens Lumber Co., Athens, Ga.

Francis Sullivan renovated three paintings, Self Portrait by Benjamin West, Portrait Group by Frank W. Wilkin, and Top of the Continent, Mt. McKinley, by Sydney Laurence.

The following paintings were relined and restored by Harold F. Cross: My Children, by Abbott H. Thayer; The Chief's Canoe, by Belmore Brown; James Pollard Espy, by Thomas Sully; Portrait of Admiral S. F. DuPont, by Daniel Huntington; The Peacock, by Abbott H. Thayer; A Reading, by Thomas Dewing; and Maine Coast, by Paul Dougherty.

SPECIAL EXHIBITIONS

Nine special exhibitions were held during the year:

October 20 through November 11, 1959. The 22d Metropolitan Art Exhibition, sponsored by the American Art League, consisting of 96 paintings and 21 sculptures. A catalog was privately printed.

December 12, 1959 through January 10, 1960. Norwegian Tapestries, sponsored by the Ambassador of Norway and Mrs. Paul Koht, and circulated by the Smithsonian Traveling Exhibition Service, consisting of 60 tapestries and 55 objects of folk art. An illustrated catalog was privately printed.

January 17 through February 7, 1960. The 23d National Exhibition sponsored by the Society of Washington Printmakers, consisting of 158 prints. A catalog was privately printed.

February 14 through March 3, 1960. The 63d Annual National Exhibition sponsored by the Washington Water Color Club, consisting of 119 items. A catalog was privately printed.

February 13 through March 6, 1960. Three Danish Printmakers (Povl Christensen, Palle Nielsen, Sigurd Vasegaard), sponsored by the Ambassador of Denmark and Countess Knuth-Winterfeldt, and circulated by the Smithsonian Traveling Exhibition Service, consisting of 62 prints. An illustrated brochure was privately printed.

March 13 through April 3, 1960. The 20th Biennial Art Exhibition of the National League of American Pen Women, consisting of 206 items including paintings, sculpture, ceramics, illuminations and decorative arts. A catalog was privately printed.

April 9 through May 1, 1960. Greek Costumes and Embroideries, sponsored by the Ambassador of Greece and Mme. Liatis, and circulated by the Smithsonian Traveling Exhibition Service, consisting of 240 examples including 22 rare and beautiful costumes and household objects. An illustrated catalog was privately printed.

May 7 through 30, 1960. The World Premiere of the United States Air Force Art, consisting of 92 paintings. A catalog was privately printed.

June 5 through July 4. The Tennessee Salon, sponsored by the Tennessee Art League, consisting of 141 paintings and 9 sculptures.

Respectfully submitted,

Thomas M. Beggs, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on the Freer Gallery of Art

Sir: I have the honor to submit the fortieth annual report on the Freer Gallery of Art, for the year ended June 30, 1960.

THE COLLECTIONS

Twenty objects were added to the collections by purchase as follows:

BRONZE

59.14. Chinese, Shang or early Chou, 11th century B.C. Vessel of the type *chih*. Light green patination. Design in relief. Six character inscription on both the lid and the inside bottom of the vessel. Width: 0.153, height: 0.243. (Illustrated.)

59.15. Chinese, Shang dynasty. Vessel of the type *ting*, with a raised nipple design on squares of something resembling the thunder pattern. These squares and the dragon band just below the lip are incised and filled with some sort of black inlay. The patina is green with traces of azurite. Inside is an inscription of four characters. Width: 0.167, height: 0.204.

LACQUER

60.7. Japanese, Edo period, ca. A.D. 1650. Spouted bowl with cover; wood base; of the type termed Hidehira, with Christian symbol. 0.151 x 0.235.

PAINTING

59.17. Chinese, dated in correspondence with A.D. 1354, Yüan dynasty, by Wang Meng. Landscape: "Secluded Dwellings in the Summer Mountains." Kakemono; ink and touches of light color on silk. One inscription and 10 seals on the painting. 0.568 x 0.342.

60.1. Chinese, Sung dynasty, attributed to Fan-lung, 12th century, Arhats. Nineteen seals on the painting and traces of one four-character inscription, effaced and illegible. Five colophons, accompanied by a total of 23 seals. Makimono; ink on paper. 0.305 x 10.625.

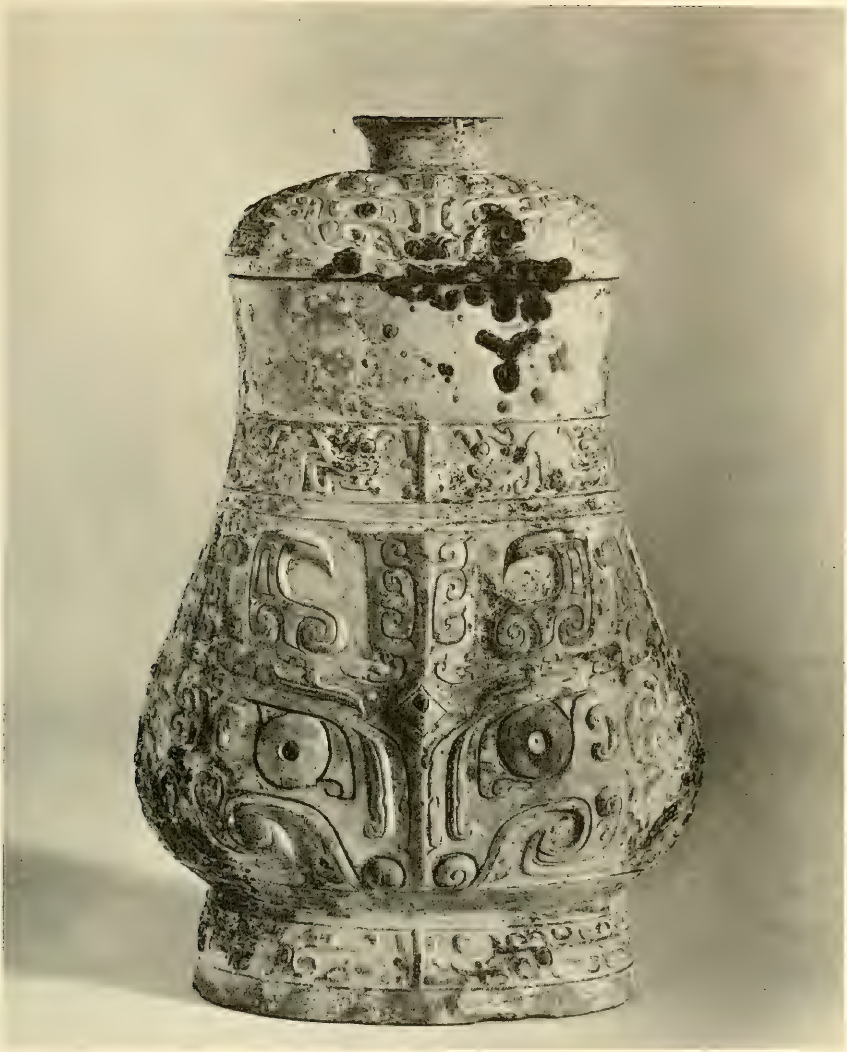
60.2. Chinese, Sung or Yüan dynasty, attributed to Tzu-wen (Jih-kuan), fl. mid-13th century, Grapevines. One inscription and two seals on the painting. Kakemono; ink on silk. 0.425 x 0.984.

60.3. Chinese, Ming dynasty, 15th or early 16th century, copy after (?) Chao Ling-jang. A pond in autumn. Eleven seals on the painting; four on the mount preceding the painting, and one on the mount following. Seven colophons, accompanied by a total of 68 seals. Makimono; colors on silk. 0.241 x 1.875.

60.4. Chinese, Sung dynasty, or earlier, in the style of Chou Fang. Ladies playing "double-sixes." No seals or inscriptions. Fragment of 39.37. Painted in ink and colors on silk. 0.297 x 0.154.

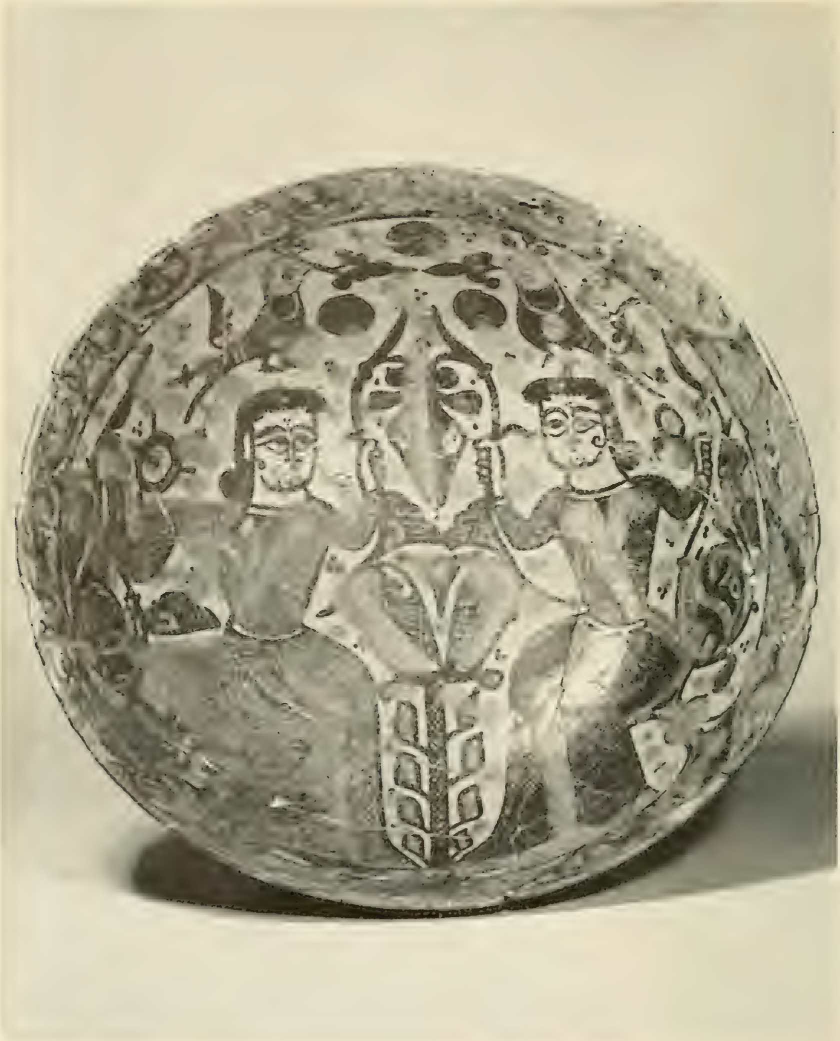
59.12. Japanese, Edo period. Ukiyoe, Miyagawa Chōsun (1682–1752). Festivals of the Twelve Months. 14.2 x 0.313.

59.13. Japanese, Kamakura period, Yamato-e school. *Yūzū Nembutsu Engi*, dated 1329. Makimono; ink, color and gold on paper. One of a pair: 58.11. 0.267 x 11.161.



59.14

Recent addition to the collections of the Freer Gallery of Art.



59.16

Recent addition to the collections of the Freer Gallery of Art.

59.18. Japanese, Kamakura period. 14th century, Yamato-e school. *Ippen Shōnin Eden* (fragment). Makimono; ink and color on paper. 2.058 x 0.305. (Illustrated.)

60.6. Japanese, Edo period. 18th century, Ōtsue. A devil playing a samisen. Ink and color on paper. 0.215 x 0.609.

60.8– Korean, Yi dynasty, Chong Son (Kyōmjae), 1676–1759.
60.12. Landscapes, five album leaves. Ink on paper. Average size: 0.145 x 0.218.

POTTERY

60.5. Japanese, Edo period. ca. 1650, Kutani (Suisaka). Small dish with fluted rim, of white clay with brown glaze and maple leaf decoration in white. 0.150 x 0.033.

59.16. Persian, 9th century, Khurasan. Deep bowl on low base, decorated with a seated figure on either side of a central tree design, space-filling birds and floral motifs. Black, yellow, and green pigments on tannish grounds, colorless glaze. Repaired. Height: 0.106. Max. diameter: 0.269. (Illustrated.)

SCULPTURE

59.11. Cambodian, Khmer, Angkor period, style of the Kleang (9th–10th century, A.D.). Standing figure of a female deity carved in reddish brown sandstone.

REPAIRS TO THE COLLECTION

Forty-nine Chinese and Japanese objects were restored, repaired, or remounted by T. Sugiura. In addition, he repaired one book for the library and bound 25 books for the library. Repairs to the collections outside the Freer Gallery were done by Istvan P. Pfeiffer who completed the regilding of 12 frames for paintings.

CHANGES IN EXHIBITIONS

Changes in exhibitions amounted to 468, which were as follows:

American art:	
Drawings	29
Etchings	9
Lithographs	10
Oils	37
Water colors	2
Chinese art:	
Bronze	2
Ivory	2
Paintings	7
Pottery	3
Christian art:	
Crystal	2
Glass	6
Gold	18
Manuscripts	8
Paintings	14
Stone sculpture	2
Indian art:	
Lacquer	1
Metalwork	2
Paintings	3
Japanese art:	
Lacquer	17
Metalwork	1
Paintings	91
Pottery	21
Korean art:	
Bronze	1
Jade	7
Metalwork	9
Pottery	29
Near Eastern art:	
Crystal	2
Jade	1
Glass	11
Manuscripts	26
Metalwork	38
Paintings	20
Pottery	33
Tibetan art:	
Paintings	4

LIBRARY

Accessions of books, pamphlets, periodicals, and study materials totaled 738 pieces of which over one-half were purchases. Unfortunately the cost of publication increases, and the many institutions and societies that formerly sent their journals freely, in exchange or gratis, now find it necessary to offer them on subscription basis in order to assure continuity of publication. Fewer titles were acquired but the cost of the purchases was greater.

Some important works acquired in a wide bibliography of art included *Hō-un*, nos. 1–36 (1932–1946), Tokyo and Kyoto; *Ku Kung min hua san pai chung* (300 masterpieces of Chinese painting in the Palace Museum collection), selected and compiled by an editorial committee . . . of the National Palace Museum and the National Central Museum, Taichung, Taiwan, 1959; six folio *pên* in *t'ao; Shang-hai po-wan-kuan ts'ang-hua chi* (collection of paintings from the Shanghai Museum), Shang-hai jen-min ch'u-pan-she, 1959; *Chinese painting: leading masters and principles*, by Osvald Sirèn, 2 sections in 7 volumes, New York, Ronald Press, 1956–58; *Chung-hua ta tz'ū tien* (Encyclopedia sinica), compiled by Yang Chia-lo, to be complete in 40 volumes, Taipei. Chinese cultural research institute, 1960; The *Maasir-ul-umara*, by Nawáb Samsam-ud-Dowla Shah Nawáz Khan Rahím . . . Calcutta, Asiatic Society of Bengal, 1887–1897, 3 volumes in Persian; *The Māāthir-ul-umarā*, being biographies of the Muhammadan and Hindu officers of the Timurid sovereigns of India from 1500 to about 1780 A.D., by Nawwāb Samsam-ud-Daulah S̲hāh Nawaz K̲han and his son 'Abul-Hayy (second edition), translated by H. Beveridge . . . revised, annotated, and completed by Baini Prasha, Calcutta, Royal Asiatic Society, 1911–52, 2 volumes (Bibliotheca Indica, Work No. 202); *Nishikie no kaiin no kōshō* (the date proof marks on prints), by Ishii Kendō, Tokyo, Isehin shoten, 1920.

An exchange of study photographs of Whistler paintings has been instituted with the University of Glasgow, and the Gallery has received 80 study photographs of the little-known Whistler paintings which Miss Rosalind Birnie Philip gave to the University.

Sam R. Broadbent presented an etching for the study collection, "Little Quimper," by Charles A. Platt, the architect for the Freer Building.

Four locked bookcases of four sections each installed by the cabinet shop provided much-needed expansion for the Orientalia. Mrs. Hogenson and Mrs. Usilton did the reshelving and made an inventory while doing so. All the cataloged books and pamphlets were accounted for when finished. The folio books were marked with the proper symbol and the catalog cards marked to correspond.

The year's record of cataloging is current and included a total of 1,782 entries of which 1,039 were analytics, 280 books and pamphlets (by title) were cataloged, and 35 titles were recataloged and reclassified. The original and difficult nature of the cataloging is emphasized by the fact that only 8 percent of the necessary cards were found at the Library of Congress.

In all, 422 scholars and students not members of the Freer staff used the library. Twenty-two of these saw and studied the Washington Manuscripts and five interested persons came to see the library installation.

PUBLICATIONS

Four publications were issued by the Gallery as follows:

Ars Orientalis, Vol. 3, 12 articles in English, French, or German, 16 book reviews, 1 bibliography, 4 notes, In Memoriam. (Smithsonian Institution Publication 4381.) (263 pp., 137 collotype pls., text illustrations.)

Medieval Near Eastern ceramics in the Freer Gallery of Art, by Richard Ettinghausen. Illus. cover, 7 pp. text and 31 pp. with 40 illus. (Smithsonian Institution Publication 4420.)

Occasional Papers, Vol. 3, No. 2: Calligraphers and Painters, by V. Minorsky, 1959. (Smithsonian Institution Publication 4339.) (223 pp., 8 collotype pls.)

Hokusai: Paintings and drawings in the Freer Gallery of Art, by Harold P. Stern, Illus. cover, 11 pp. text and 25 pp. with 36 illus. (Smithsonian Institution Publication 4419.)

Papers by staff members appeared in publications as follows:

Cahill, James F. Chinese paintings, xi-xiv centuries. New York, Crown Publishers, 1960. 40 pp. illus., 27 pls. (part col.) (Art of the East library.)

———. A rejected portrait by Lo P'ing; pictorial footnote to Waley's *Yüan Mei. Asia Major*, n. s., vol. 7, pp. 32–39, 3 pls., 1959.

———. Review of "Mindai no kaiga," by Yonezawa Yoshiho Tokyo, Mayuyama Ryūsendō, 1956. *Revue bibliographique de sinologique*, vol. 2, no. 345, 1956.

———. Review of "Rō Kan no sakuhin ni tsuite," by Rōtani Kenyū, *Bunka*, vol. 20, pp. 234–247, 1956. *Revue bibliographique de sinologique*. vol. 2, no. 342, 1956.

———. Review of "The tao of painting," by Sze Mai-mai. 2 vols., New York, Pantheon Books, 1956. *Revue bibliographique de sinologique*. vol. 2, no. 346, 1956.

Ettinghausen, Richard. Abbasside art: Mural painting; miniatures; decorative arts (pottery, glass and rock crystals, woodwork, textiles). *Encyclopedia of world art*, New York, McGraw-Hill Book Co., vol. 1, cols. 10–15, pls. 4–13, 1959.

———. 'Abdu 'S-Ṣamad, or Hvāga, 'Abdu 'Ṣamad. *Encyclopedia of world art*, New York, McGraw-Hill Book Co., vol. 1, cols. 15–19, pls. 14–17, 1959.

———. Bibliography of the writings of J. V. S. Wilkinson. *Ars Orientalis*, vol. 3, pp. 259–262, 1959.

———. Bihzad, Kamal al-Dīn. *Encyclopedia of Islam*. 2d ed., Leiden, E. J. Brill; London, Luzac & Co., vol. 1, fasc. 19, pp. 1211–1214, pls. xxxiii–xxxvi, 1959.

Ettinghausen, Richard. The Bustan manuscript of Sultan Nasir Shah Khalji. *Marg.*, vol. 12, no. 3, pp. 42–43, illus., June 1959.

———. Les elements decoratifs turcs des objets en or et en argent. *Papers premier congrès international des arts turcs* . . . (Université d'Ankara), p. 89, 1959.

———. Further comments on the Wade Cup. *Ars Orientalis*, vol. 3, pp. 197–200, pl., 1959.

———. Near Eastern book covers and their influence on European binding: a report on the exhibition of "History and Bookbinding," at the Baltimore Museum of Art, 1957–58. *Ars Orientalis*, vol. 3, pp. 113–131, pls., 1959.

———. New light on early animal carpets. In *Aus der Welt der islamischen Kunst: Festschrift für Ernst Kühnel.* Berlin, pp. 93–116, 1959.

———. On some Mongol miniatures. *Kunst des Orients*, vol. 3, pp. 44–65, illus., 1959.

———. Tadhhīb (Illumination). *Urdu encyclopedia of Islam*, Lahore, vol. 1, 12 pp., 28 figs., 1959.

———. Tajlīd (Bookbinding). *Urdu encyclopedia of Islam*, Lahore, vol. 1, 13 pp., 18 pls., 1959.

———. Un tissu de la prèmiere époque Ottomane. *Papers premier congrès international des arts turcs* . . . (Université d'Ankara), pp. 87–88, 1959.

———. Review of "Iran; Persian miniatures—Imperial Library," compiled by UNESCO, Greenwich, Conn., New York Graphic Society, 1956. *Ars Orientalis*, vol. 3, pp. 217–220, 1959.

———. Review of "Islamic art and archaeology. A register of work published in the year 1954," by J. D. Pearson and D. S. Rice, Cambridge, Heffer & Sons, 1956. *Ars Orientalis*, vol. 3, pp. 215–216, 1959.

———. Review of "Islamic pottery from the ninth to the fourteenth centuries A.D. in the collection of Sir Eldred Hitchcock . . .," London, Faber & Faber, 1956. *Ars Orientalis*, vol. 3, pp. 216–217, 1959.

Gettens, Rutherford J. The Freer Gallery Laboratory for technical studies in Oriental art and archaeology. *Studies in Conservation*, vol. 4, pp. 140–145, illus., 1959.

———. Review of "Studies in ancient technology," vol. 5, by R. J. Forbes, Leiden, E. J. Brill, 1957. *American Journal of Archaeology*, vol. 63, p. 285, 1959.

Pope, John A. Review of "Chinese celadon wares," by G. St. G. M. Gompertz, London, Faber & Faber, 1958. *Artibus Asiae*, vol. 21, pp. 290–295, 1958.

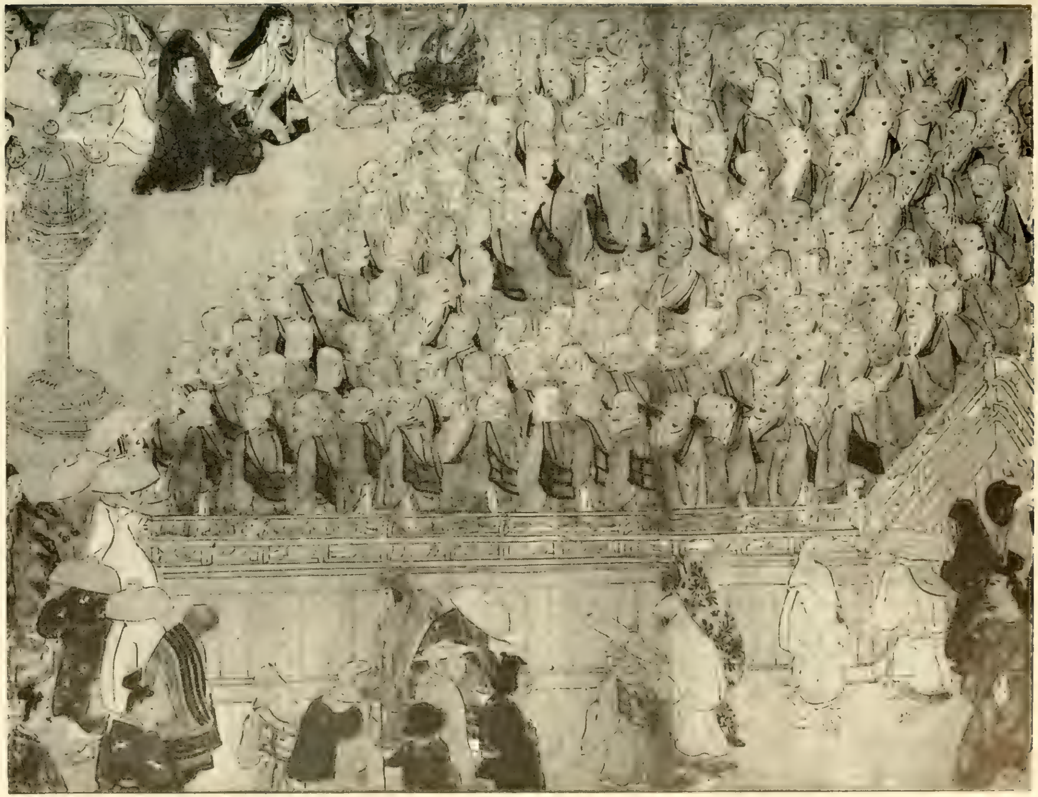
———. An early Ming porcelain in Muslim style. In *Aus der Welt der islamischen Kunst; Festschrift für Ernst Kühnel* . . . Berlin, Gebr. Mann, 1959, pp. 357–375, 9 figs., 14 pls.

Stern, Harold P. [Arranging and cataloging the Hauge collection for] Japanese art in America: prehistory—A.D. 1900. Scripps College art galleries, April 19–May 15, 1960, Pomona, Calif., Day Printing Corporation, 30 pp., 34 pls., 1960.

———. Japan's earliest ceramics on tour. *Museum News*, vol. 38, no. 5, pp. 26–29, illus., Jan. 1960.

———. Masterpieces of Asian art in American collections . . . (Korean section) as shown in Asia House, January–February, 1960. New York, Carnegie Press, Inc., 64 pp., illus., 1960.

———. One hundred objects of Asian art from the Avery Brundage collection (at the) M. H. De Young Memorial Museum, San Francisco, May 10 to June 12, 1960. Korean and Japanese Sections. San Francisco, H. S. Crocker Co., 122 pp., cover illus., front., pls., 1960.



59.18

Recent addition to the collections of the Freer Gallery of Art.

STERN, HAROLD P. Treasures of Japan; Seattle Art Museum, June 25 through August 21, 1960. Seattle, the Museum, 1960.

———. Review of "Hokusai; paintings, drawings and woodcuts," by J. Hillier, London & New York, Phaidon Press, 1957. *Journal of Asian Studies*, vol. 19, pp. 87–88, 1959.

———. Introduction to: Figure prints of old Japan, a pictorial pageant of actors & courtesans of the eighteenth century reproduced from the prints in the collection of Marjorie & Edwin Grabhorn . . . San Francisco, The Book Club of Canada, 1959.

USILTON, BERTHA M. Compiled Index to Far Eastern Ceramic Bulletin, 1949–58, 8 pp., issued as separate for the bulletin, Oct. 1959.

WENLEY, ARCHIBALD GIBSON. A parallel between Far Eastern and Persian painting. In *Aus der Welt der islamischen Kunst; Festschrift für Ernst Kühnel* . . . Berlin, Gebr. Mann, 1959, pp. 350–356, 4 pls.

PHOTOGRAPHIC LABORATORY AND SALES DESK

The photographic laboratory made 6,943 items during the year as follows: 4,816 prints, 567 negatives, 1,383 color slides, 160 black-and-white slides, and 17 color film sheets. In all, 3,225 slides were lent during the year.

BUILDING AND GROUNDS

The exterior walls appear to be sound and in good condition. The bronze doorways and area work surrounding the court were refinished under contract. The wooden flagpole was replaced with an aluminum one.

The structural steel in the attic was cleaned of rust and spotted with aluminum paint, pending the time when the attic can be completely repainted.

The cleaning of the limestone of the first floor was continued and is now about 75 percent complete.

The walls in galleries IX, X, and XI were removed and new plaster walls installed. The plaster was then covered with a vinyl resin coated fabric, resulting in a marked improvement.

The auditorium was redecorated and new floor covering installed.

All corridors and storage rooms in the basement were painted. The north wall of the south corridor leading to the auditorium was rebuilt. The shelving in the stone storage room was removed and new metal shelving ordered for this area. Two hand-rails were installed inside the north side of the building leading to both sides of the gallery corridors.

In the courtyard replacements were made in the two azalea beds on the south side, and 14 yards of zoysia grass were replanted on that side of the building. The plantings around the fountain made excellent showings. Vinca has been planted for the coming summer season and appears to be doing well.

ATTENDANCE

The Gallery was open to the public from 9 to 4:30 every day except Christmas Day. The total number of visitors to come in the main entrance was 120,077. The highest monthly attendance was in August, 16,183.

There were 2,682 visitors who came to the Gallery offices for various purposes—for general information, to submit objects for examination, to consult staff members, to take photographs or sketch in the galleries, to use the library, to examine objects in storage, etc.

AUDITORIUM

The series of illustrated lectures was continued as follows:

1959	
October 20.	Robert T. Paine, Museum of Fine Arts, Boston, "Japanese Prints of Beauties of the Three Cities." Attendance, 188.
November 10.	Prof. Harald Ingholt, Yale University, "Buddhist Art of Gandhara, Native and Foreign Influences." Attendance, 152.
1960	
January 13.	Prof. W. Norman Brown, University of Pennsylvania, "Vasanta Vilasa, an Illustrated Spring Poem in Old Gujarati." Attendance, 85.
February 9.	Dr. Sherman E. Lee, Cleveland Museum of Art, "Liang Ch'ing-piao: Silent Collector, Eloquent Collection." Attendance, 159.
March 8.	Prof. S. Howard Hansford, University of London, "Some Problems of Chinese Jades and Bronzes." Attendance, 132.
April 12.	Prof. George H. Forsyth, Jr., University of Michigan, "Byzantine Art at the Monastery of St. Catherine on Mt. Sinai." Attendance, 234.

On May 3 ceremonies were held in the Freer Auditorium for the second presentation of the Charles Lang Freer Medal to the Near Eastern scholar, Prof. Ernst Kühnel of Berlin, Germany, "for distinguished contribution to the knowledge and understanding of Oriental civilizations as reflected in their arts." On the platform were Minister Franz Krapf, representing the Ambassador of Germany, His Excellency the Ambassador of Iran, Ardeshir Zahedi, in honor of the IVth International Congress of Iranian Art and Archaeology meeting in Washington, Dr. Richard Ettinghausen representing the Freer Galley of Art, and Dr. Leonard Carmichael, Secretary of the Smithsonian Institution, who made the presentation. Professor Kühnel responded with an address on the growth of interest in collections of Near Eastern art. This was followed by a reception in Gallery XVII. Attendance, 325.

Eight outside organizations used the auditorium as follows:

1959	
September 17.	Daughters of the American Revolution special regents' meeting. Attendance, 272.
October 29.	Department of Health, Education, and Welfare, Food and Drug Division meeting. Attendance, 76.
November 17, 18.	Department of Agriculture, Federal Extension Service, meetings. Attendance, 117 and 75.
December 15.	Department of Health, Education, and Welfare, Food and Drug Division meeting. Attendance 25.
1960	
January 18.	Department of Agriculture, REA conference. Attendance, 118.
January 21.	Department of Health, Education, and Welfare, Microbiology seminar. Attendance, 56.
January 25, 26.	Department of Health, Education, and Welfare, Food and Drug Division meetings. Attendance, 290 and 169.
February 18.	Department of Health, Education, and Welfare, Food and Drug Division meeting. Attendance, 72.
March 17.	Department of Health, Education, and Welfare, Food and Drug Division meeting. Attendance, 72.
April 21.	Department of Agriculture. Food and Drug Division meeting. Attendance, 68.
May 2.	The IVth International Congress of Iranian Art and Archaeology, all-day meeting. Attendance, 128.
May 19.	Department of Agriculture. Food and Drug Division of Pharmaceutical Chemistry, meeting. Attendance, 138.
May 23.	Indian Embassy, Educational Department, presented Mrs. Sarada Arundel in Indian dances with a talk given by Mrs. Rukmini Devi. Attendance, 284.

STAFF ACTIVITIES

The work of the staff members was devoted to the study of new accessions, objects contemplated for purchase, and objects submitted for examination, as well as to individual research projects in the fields represented by the collections of Chinese, Japanese, Persian, Arabic, and Indian materials. Reports, oral and written, and exclusive of those made by the technical laboratory (listed below), were made on 10,379 objects as follows: For private individuals, 7,004; for dealers, 1,484; for other museums, 1,891. In all, 1,021 photographs were examined, and 321 Oriental language inscriptions were translated for outside individuals and institutions. By request, 24 groups totaling 258 persons met in the exhibition galleries for docent service by staff members.

Three groups totaling 34 persons were given docent service by staff members in the storage rooms.

Among the visitors were 95 distinguished foreign scholars or persons holding official positions in their own countries who came here under the auspices of the State Department to study museum administration and practices in this country.

During the year the technical laboratory carried on the following activities:

Objects examined by various methods, including microscopic and microchemical examination, X-ray diffraction and spectrochemical analysis, examination in ultraviolet light, and specific gravity determination:

Freer objects examined	86
Outside objects examined	135

The following projects were undertaken by the laboratory during the year:

1. For a period of four weeks in September, Miss Elisabeth West worked as a guest in the Chemistry Department, Brookhaven National Laboratory, Upton, Long Island, N.Y. Her project of spectrochemical analysis of some 30 inscribed ceremonial bronzes from the Freer collection, begun in 1958, was brought to completion.
2. Continued editorship of *IIC Abstracts* (*Abstracts of the Technical Literature on Archaeology and the Fine Arts*) published by the International Institute for Conservation of Museum Objects, London.
3. Continued systematic collection of data on the technology of ancient copper and bronze in the Far East.
4. Continued studies on the corrosion products of ancient metal objects.

By invitation the following lectures were given outside the Gallery by staff members (illustrated unless otherwise noted):

1959

July 14.	Mr. Gettens, at the International Institute for Conservation of Historic and Artistic Works, United Kingdom Group at the Institute for Archaeology, London, England, "Preliminary Technical Studies on Ancient Bronze Ceremonial Vessels." Attendance, 30.
October 20.	Dr. Ettinghausen, at Congress of Turkish Art in Ankara, Turkey. "The Anatolian Mosque" and "The Problems of Working with Subjects on Turkish Art."
October 23.	Dr. Ettinghausen, at Ankara, Turkey (Ankara University), to the First International Congress on Turkish Art, "An Early Ottoman Textile" and "Turkish Elements in the Decorative Arts." Attendance, 180 and 200, respectively.
October 25.	Dr. Ettinghausen, at banquet given by Governor and Mayor of Konya, to the First International Congress of Turkish Art, "The Miracle of Konya." Attendance, 180.
November 4.	Dr. Pope, at Harvard University, Cambridge, Mass., "Chinese Export Porcelains." Attendance, 150.
November 6.	Dr. Pope, at Harvard University, Cambridge, Mass., "Angkor." Attendance, 250.
November 6.	Dr. Ettinghausen, at University of Istanbul, Turkey, "Some Problems of Early Turkish Art." Attendance, 45.
November 9.	Dr. Pope, J. B. Speed Art Museum, Louisville, Ky., "Chinese Export Porcelains." Attendance, 85.
December 11.	Dr. Cahill, at Cleveland Museum of Art, Cleveland, Ohio, "Great Chinese Paintings in Far Eastern Collections." Attendance, 55.

1960

January 11. Dr. Stern, in Richmond, Va., to the Council, Virginia Museum of Fine Arts, "Survey of Japanese Art." Attendance, 250.

January 13. Dr. Pope, at Cosmos Club, Washington, D.C., to Cultural Affairs Officers, "Charles Lang Freer and the Freer Gallery of Art." Attendance, 70.

January 14. Dr. Cahill, at Smithsonian Institution Regents' Annual Dinner, Washington, D.C., "Ku-kung (Palace) Museum in Formosa." Attendance, 26.

March 10. Dr. Cahill, at Princeton University, Princeton, N.J., "On the Dating and Attribution of Some Early Chinese Landscapes." Attendance, 150.

March 30. Dr. Cahill, at American University, "The Haiku in Japanese Poetry." Attendance, 20.

May 9. Dr. Ettinghausen, at Walters Art Gallery, Baltimore, Md., "Special Exhibition of Persian Objects Arranged for the Fourth International Congress of Persian Art." Attendance, 107.

May 19. Dr. Ettinghausen, at University of Pennsylvania, Philadelphia, "Interrelationship of Near Eastern and Indian Paintings during the Middle Ages." Attendance, 38.

May 24. Mr. Gettens, in Boston, Isabella Stewart Gardner Museum, "Notes on Museum Laboratories Visited in England and on the Continent, Summer 1959." Attendance, 50.

May 25. Mr. Gettens, in Boston, at the International Council of Museums luncheon, "Status and Program of the Rome Center." Attendance, 150.

May 25. Mr. Gettens, in Boston, to the American Working Party of the *IIC Abtracts*, "Report on *IIC Abstracts*." Attendance, 15.

June 15. Mr. Gettens, in Chicago, to the Microscopy Symposium for 1960 (held by McCrone Associates), "Microscope Examination of Art Objects." Attendance, 150.

Members of the staff traveled outside Washington on official business as follows:

1959

June 14–August 12. Mr. Gettens began a 2-month trip to Europe in June, visiting museums in Glasgow and Edinburgh. He attended, in Copenhagen, the Joint Session of the ICOM Commission for the care of paintings. This meeting was attended by about 60 delegates from museum laboratories from all over the world. A highlight of the session was a visit to the Carbon-14 Laboratory at Copenhagen University. He attended meetings of the International Council of Museums in Stockholm and visited several of the museums there, paying special attention to the world-famed collections of Oriental art and the newly established laboratory in the Museum and Office of Royal Antiquities. He viewed Far Eastern antiquities in the private collection of His Majesty King Gustav VI, at the Royal Palace. He went with the Conference to Drottningholm Palace where all members had been invited to meet the King, see the fine collec-

1959	
	tion of bronzes, tapestries, Royal portraits and objects of art, and to attend at the Drottningholm Palace Theatre, a special performance of the eighteenth-century comic opera "Il Maestro." Visits were made by the group to Skokloster Castle and to Uppsala. In London Mr. Gettens spent several days visiting laboratories and collections in the Courtauld Institute of Art, the National Gallery, the British Museum, the Victoria and Albert Museum, and the Tate Gallery. Of special interest was a visit to Appleby in Westmorland to discuss business matters with the printer of *IIC Abstracts*. Other visits included: Brussels, the world-famed Institut du Patrimoine Artistique de Belgique; in Zurich, the newly established Laboratory of the Swiss National Museum; in Naples, the Museo e Gallerie Nazionali di Capodimonte and the ruins of Pompeii. Return was via London where more museum visits and professional contacts were made.
July 23–25.	Dr. Stern, in Chicago, examined the following objects for possible inclusion in the Asia Society Museum Inaugural Show: 56 Japanese and Korean objects at the Chicago Art Institute; 30 Chinese and Japanese objects belonging to a private collection; 100 Chinese and Korean objects in the Junkung Collection; 24 Chinese jades and paintings that belong to the Chicago Museum of Natural History; and 16 Japanese and Chinese objects belonging to dealers.
September 21–December 11.	Dr. Ettinghausen, in Europe and the Near East, attended the First International Congress on Turkish Art in Ankara, Turkey, visited Israel, England, France, Germany, Austria, Italy, Greece, Ireland, Switzerland, Holland, and Belgium. While in Berlin, he attended the *Festschrift* presentation in honor of Prof. Ernst Kühnel.
October 13–14.	Dr. Stern, in Toronto, Canada, examined objects at the Royal Ontario Museum, Hart House, Lee Collection, University of Toronto, and the Canadian Customs Service.
October 16–17.	Dr. Stern, in New York City, examined objects at Metropolitan Museum, New York Public Library, and saw the Bonnier Exhibition.
November 13–17.	Mr. Gettens examined 15 Egyptian objects (bronzes) in Walters Art Gallery, Baltimore, Maryland; in New York attended a meeting of Advisory Council for a Center for Teaching and Research in Conservation (Institute of Fine Arts, New York University).
December 2.	Mr. Gettens, in New York City, examined bronze objects at Metropolitan Museum of Art.
December 15–21.	Dr. Stern, in New York City, examined objects in museums, galleries, and private collections.
1960	
January 5–7.	Dr. Stern examined objects at dealers in New York City.
January 6–7.	Dr. Stern, in New York City, attended an exhibition of Japanese art at Asia House, sponsored by Japan Society.
January 11.	Dr. Ettinghausen, in Baltimore, visited the Persian Art Exhibition at Walters Art Gallery.

1960

January 15–28.	Dr. Cahill, in Geneva, Switzerland, worked on book with Albert Skira and members of his staff. He visited: Far Eastern Exhibitions in the Rijksmuseum in Amsterdam and in The Hague; in London, Far Eastern exhibits in the British Museum, at the Percival David Foundation; and in New York examined Chinese paintings in the hands of several dealers.
February 21–March 23.	Dr. Stern, in Seattle, San Francisco, Santa Barbara, Los Angeles, and Chicago, examined objects at dealers and in private collections.
March 5–8.	Mr. Gettens, in New York City, attended meetings of Standing Committee for Artists' Oil Paints and examined objects at dealers.
March 11.	Dr. Cahill attended Seminar at Princeton University on Yüan paintings. Attendance 7.
March 28.	Dr. Pope went to Taiwan where he served as chairman of the American Selection Committee for the Exhibition of Chinese Art Treasures, to be held in five American museums in 1961–62.
April 22–30.	Dr. Ettinghausen, in New York, Philadelphia, and Baltimore, attended the IVth International Congress of Iranian Art and Archaeology as a member and delegate. Presided at the session held at the Donnell Library Center in New York City; also gave the eulogy on L. A. Mayer. Examined objects at dealers, in museums and private collections.
May 9.	Miss West and Mr. Gettens, in Boston, attended the meetings of the International Institute for Conservation of Historic and Artistic Works held in the Isabella Stewart Gardner Museum and the Fogg Art Museum.
May 10–19.	Dr. Pope, in Manila, studied the collection of Chinese and Siamese ceramics excavated in the Philippines by Prof. H. Ottey Beyer. He also visited the excavation sites at Calatagan.
May 25.	Miss West and Mr. Gettens, in Boston, attended meetings of the American Working Party of *IIC Abstracts* held in the Statler Hotel. Miss West served as co-chairman of the Program Committee for the meeting; visited the plant of Baird-Atomic, Inc. and the Laboratory of the Museum of Fine Arts. Mr. Gettens examined objects at the Museum of Fine Arts.
May 25–27.	Miss West and Mr. Gettens, in Boston, attended the meetings of the American Association of Museums.
June 13–17.	Mr. Gettens, in Chicago, attended the Microscopy Symposium, 1960, held by McCrone Associates; also examined objects in a private collection.
June 3.	Dr. Ettinghausen, at the Textile Museum, examined (as member of the Acquisition Committee) 40 Peruvian objects, 5 Mexican objects, 1 Turkoman, and 30 Indian printed cottons.

As in former years, members of the staff undertook a variety of peripheral duties outside the Gallery, served on committees, held honorary posts, and received recognition.

The Freer Gallery of Art again participated in the Wellesley-Vassar Washington Summer Intern Program designed for students interested in obtaining a rounded experience in the general operation and purposes of a gallery, and in broadening familiarity with the field of art in general. Through our error, the 1958–59 report should have named Miss Margo Parsons and Miss Elizabeth Chanler as interns for 1958. Miss Nancy Orbison, Vassar College, Poughkeepsie, served as our volunteer for the program during this summer.

Respectfully submitted.

A. G. Wenley, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on the National Air Museum

Sir: I have the honor to submit the following report on the activities of the National Air Museum for the fiscal year ended June 30, 1960:

Substantial progress was made on preliminary studies for the new National Air Museum building. The architectural firm of Harbeson, Hough, Livingston & Larson assisted in this work and presented several possible building concepts. One of these has been selected for further consideration when planning funds for the building are made available.

Among the many significant accessions received during the year were: A full-scale replica of the Atlas rocket and nose cone; three original Farre paintings; the C. G. B. Stuart collection of aviation photographs and books; the Lindbergh Lockheed "Sirius" airplane; a bronze portrait of Gen. James H. Doolittle; the Ryan X-13 "Vertijet"; original letter carried as the first space mail; and the "Able-Baker" space capsules.

The Aircraft Building was completely renovated and a new exhibit was installed, which was not only an improvement over the former one but provided much valuable experience in planning the exhibit for the proposed new Air Museum building. The building was opened to the public on April 15. By June 30, 292,406 visitors to this exhibit had been counted.

A number of boxed aircraft were moved from indoor to outdoor storage, with suitable protection, to provide indoor storage space for about 30 historic airplanes which have been held for some years for the Air Museum by the United States Navy.

Information service again increased in scope and volume during the year. This included the furnishing of technical, historical, and biographical information pertaining to the development of air and space flight to Government agencies, schools, research workers, authors, students, and the public. Many useful acquisitions to the Museum's library, reference, and photographic files were received, including collections of 30,000 aviation photographs and 1,400 volumes of early aviation history.

The curatorial staff during the year completed the research for and the writing of approximately 800 labels for the new Aircraft Building exhibit.

ADVISORY BOARD

A meeting of the Advisory Board was held on December 16, 1959. The Secretary of the Smithsonian Institution welcomed the new members of the Board, Maj. Gen. Brooke C. Allen, U.S.A.F., and Rear Adm. P. D. Stroop, U.S.N. The Board expressed approval of changing the name of the National Air Museum to the National Air and Space Museum, at an appropriate time, to reflect the widening responsibility of the Museum in the field of historic space flight. The Board also discussed generally the requirements for the new Air Museum building.

SPECIAL EVENTS

A number of presentation ceremonies of note were held during the year. Among these were the presentation of a sculpture of James H. Doolittle by H. S. M. Burns, president of the Shell Oil Co.; the C. G. B. Stuart collection of aviation books by Richard Fell, president of the National Aviation Club; and an Atlas rocket and nose cone by the Secretary of the Air Force, Dudley C. Sharp. The Atlas ceremony was combined with the Langley Medal award, posthumously, to Dr. Robert H. Goddard. Senator Clinton P. Anderson, regent, presented the medal to Mrs. Goddard, and Congressman Overton Brooks, Smithsonian regent, accepted the Atlas for the museum.

A six weeks' course in air and space science, for graduate credit, was held at the Air Museum in cooperation with American University. Funds from the Link Foundation provided scholarships for the seven mathematics and science teachers who completed the course.

The Director attended the annual conference of the National Aviation Education Council at Denver, Colo., and addressed a panel on the "International and Economic Aspects of the Space Age." He also addressed the annual alumni meeting of the Academy of Aeronautics in New York.

Paul E. Garber, head curator and historian of the Air Museum, was honored at the Denver Conference of the National Aviation Education Council as the recipient of the National Frank G. Brewer Trophy. This award for outstanding service in aviation education was made by Jacqueline Cochran, president of the National Aeronautic Association.

Mr. Garber represented the Museum at a number of aviation meetings during the year, including the Air Force Historical Association and the Honors Night banquet of the American Helicopter Society. He delivered 30 lectures during the year, including one at the U.S. Air Force Academy.

IMPROVEMENTS IN EXHIBITS

The historic "Vin Fiz," "Winnie Mae," and "XR–4" airplanes were completely restored and preserved, the "Phantom" and "Bell X–1" were renovated, and all have been placed on exhibition in the Aircraft Building. Also, a dozen famous engines and many other historic objects were restored, preserved, and placed on display. New methods of display and protection are being tested in this new exhibit.

REPAIR, PRESERVATION, AND RESTORATION

The facilities for accomplishing proper restoration and preservation of the Museum's aeronautical collections were improved considerably during the year. Utilizing one of the storage buildings at Silver Hill, Md., the Museum can now undertake the extensive program of restoration and preservation in preparation for the new building.

ASSISTANCE TO GOVERNMENT DEPARTMENTS

The Air Museum continued its service to various Government departments during the year. Among these were the Department of Justice (in patent litigation), the Voice of America, the Department of the Air Force, and the Department of the Navy.

PUBLIC INFORMATION SERVICES

Through its information service, the Museum has handled thousands of requests during the year for technical, historical, and biographical information from publishers, authors, schools, colleges, research workers, students, and teachers. The historical research required for this service requires a substantial part of the time of the curatorial staff and assistants.

REFERENCE MATERIAL AND ACKNOWLEDGMENTS

Many useful and valuable additions to the reference files, photographic files, and library of the Museum were received during the year. These records and documents are helpful to the Museum staff in providing information, authenticating data, and for historical research.

The cooperation of the following persons and organizations in providing this material is sincerely appreciated:

Aero Design & Engineering Co., Bethany, Okla.: A series of 8–x–10″ photographs and brochures pertaining to the Aero Commander.

Air Force, Department of the, Air Force Museum, Wright-Patterson Air Force Base, Ohio: Transfer of 15 reels of varying lengths of film on early flight; Technical Reports (Army), four boxes of duplicate reports.

Air Photographic and Charting Service, USAF, Pentagon, Washington, D.C.: 40 photographs of different aviation subjects.

Air Photographic Squadron, 1350th, Wright-Patterson Air Force Base, Ohio: 16-mm. film copy of Fokker T–2 coast-to-coast flight, 1923.

Andrews, John H., Paradise, Pa.: "The Wise Story." Items: 3 newspapers, souvenir booklet, and first-day cover commemorating 100th anniversary of John Wise's first airmail flight from Lafayette, Ind.

Army Ballistic Missile Agency, Huntsville, Ala.: Motion-picture film "Nose Cone Voyagers."

Army Ordnance Command, Pentagon, Washington, D.C.: Motion-picture films "Launch of the Jupiter C Explorer" and "Guided Missiles."

Autonetics Motion Pictures, through A. V. Mattucci: Motion-picture film "Inertical Navigation."

Aviation History Publications, Concord, Calif.: Book "U.S. Marine Corps Aircraft 1914–1959," William T. Larkins.

Beech Aircraft Corp., Wichita, Kans.: News release and 6 photographs with description of the aircrafts—1960 models.

Bell, David R., Caldwell, N.J.: Postal card sent from Europe by Orville Wright to Miss Hoffman.

Bell Aircraft, Col. S. G. McLennan, Washington, D.C.: 2 photographs of "X–9 Strike" missile being launched from B–29.

Brainard, Henry A., Akron, Ohio: Documents relating to Professor Langley.

Breese, Sydney S., Sarasota, Fla.: Letter received Sept. 17, from Sydney S. Breese giving history of Breese Penguin plus an 8–x–10″ drawing by a French Ace of the type of taxi trainer used in France during WWI, plus a 2–x–4″ photograph of a biplane built by Breese in 1916 in which the first Lawrence air-cooled aluminum engine was tested.

Brown, Jamor Kenilewigle S., VSAF, Bedford, Mass.: Tapestry of Lindbergh and "Spirit of St. Louis."

Canadair Ltd., Montreal, Canada: 3-view drawings of Canadair-Convair 540, Canadair CL–28, and Canadair CL–44.

Cessna Aircraft Co., Wichita, Kans.: 3 8–x–10″ prints of Cessna 310 being used for business flying.

Clark, Miss Rosamond, Baltimore, Md.: Booklet, Harvard-Boston Aero Meet, Aug. 26-Sept. 4, 1911, official program.

Cooke, David C., Valley Stream, L.I., N.Y.: Book, "Transport Planes that made History," by David Cooke.

Deleor, Frank J., Sikorsky Aircraft, Stratford, Conn.: 3 photographs of Sikorsky helicopters used in Korea and 1 photograph each of 1909 and 1910 helicopters.

Doak Aircraft Co., Torrence, Calif.: Photographs of Doak VZ–4DA VTOL aircraft.

Douglas Aircraft, Washington, D.C.: 7 photographs of a Douglas DC–3.

Douglas, George F., Engineering Norair, Hawthorne, Calif.: 3 1:72-scale engineering drawing of Northrop XP56 and 1 1 20 : 20 "blow up."

Dove, Roger, Sikorsky Aircraft Division, Stratford, Conn.: 14 8–x–10″ photographs, 1 advertisement proof, 2 10–x–12" photos.

Emme, Eugene, Historian, NASA: Book, "The Impact of Air Power," Emme.

Falla, Nelson, Convair General Offices, San Diego, Calif.: Photographs of the B–24, Ref. Material on B–24, 800 and 600.

Fiat Aviation Division, Tarine, Italy: 90 photographs of Fiat aircraft.

Fogel, John Martin, Baltimore, Md.: Motion-picture film made by Martin Aircraft Co. of 7 models borrowed from the National Air Museum.

Franklin Institute, Philadelphia, Pa.: Photographs of Amelia Earhart's Lockheed Vega (one is model of plane); 12 sound films "Simalo Streams" (part of a series of 13 half-hour programs for Educational TV given by Dr. Lippisch of Collins Radio).

Gibson, R. J., Qantas Empire Airways, Ltd., Sydney, Australia, also F. R. Morrison: "The Aeronautical Work of Lawrence Hargrave," by T. C. Roughley, B.Sc., Bulletin 19, Technological Museum, Sydney, Australia.

Grant, Dr. Robert, Jr., San Diego, Calif.: Negatives of photographs taken by N. E. Brown of Lincoln Beachey around 1908–10 at Long Beach, Calif.

Griffon, Milt S., Thompson Products Division., Cleveland, Ohio: The Thompson Products Hubbell lithographs for 1941 captioned "Dawn of Wings." One set of twelve.

Grumman Aircraft Corp., Bethpage, L.I., N.Y.: Drawings, photographs, and specifications of Grumman Aircraft from the 1930's to the present time.

Hajime Takogi, Editor, Tokyo, Japan: 14 photographs of Japanese aircraft.

Hall, George H., North American Aviation, International Airport, Los Angeles, Calif.: 1 booklet on the "X–15" and 20 pictures of the "X–15" and her mission.

Hall, Comdr. G. M., USN, Office of Information, Washington, D.C.: 2 8-x-10″ glossy prints of each of the following: U.S.S. *Ticonderoga* (CV–14) and other ships of the fighting fleet in Ulithi Atoll (12–8–44). Platform of U.S.S. *Pennsylvania* (BB-38) completed for Ely's experiment January 1911; Ely taking off *Pennsylvania* (1–18–11), Ely landing on *Pennsylvania*, front and side view (1–18–11). USN Neg. 294131, 65693, 418709.

Henry, Lois, Henry Publications, New York, N.Y.: 2 photographs: Winners of the 1959 Powder Puff Derby, Sikorsky A/C Ser. No. XS02W, operated by Kane Laboratories, Inc.

Herford, Pegg, Los Angeles Dept. of Airports, Los Angeles, Calif.: Photographs of Los Angeles International Airport—(1) 1929, (2) 1959, showing development.

Howard, Jean Ross, Assistant to Director, Helicopter Council: Reference material on heliports.

Immenscluck, W. T., Ryan Aeronautical Co., San Diego, Calif.: Log books (copies) of the Curtiss Navy A–1 and B–1 (AH–4) aircraft.

Juergens, Philip L., Burbank, Calif.: 1 3-view drawing 16-x-23″ of Lockheed pings and other memorabilia pertaining to and associated with the life of XC–35, 5 photographs on 3-view drawing of XC–35, 5 photographs on 3-view drawing of the Lockheed Vega; 7 photographs of "X–7" Lockheed missile.

Juptner, Joseph P., Orange, Calif.: 12 photographs of aircraft.

Key, William G., William G. Key Associates, Washington, D.C.: "Controversy in the Making," by William G. Key (Pegasus Supplement).

Knabenshue, Mrs. Roy A.: Collection of books, blueprints, photographs, clippings and other memorabilia pertaining to and associated with the life of Roy A. Knabenshue.

Library of Congress, Exchange and Gift Division: Photographs from Grover C. Loening papers.

Lichten, R. L., Bell Helicopter Corp., Fort Worth, Tex.: Bell XV–3 Convertplane folder, 8-x-10″ photograph in color.

Link, Edwin A., Binghamton, N.Y.: Miscellaneous photographic prints.

Lockwell, Warren T., Hiller Helicopter, Washington, D.C.: Photograph and reference material on the X–18 tilt-wing research aircraft.

Longo, Robert R., Tyler, Tex.: "Stepchild Pilot," by Joseph Doerflinger.

LUFTHANSA, DEUTCHE, Koln, Germany: Photographs of Fokker F–2 and F–3 aircraft as used by Lufthansa.

MARQUETTE COUNTY HISTORICAL SOCIETY, Marquette, Mich.: Collection of early airline labels, baggage stickers and tags. (From Dr. John N. Lowe collection.)

MARTIN COMPANY, Baltimore, Md.: Motion-picture film, "Project Vanguard," color-sound 28 minutes.

MASSIN, ALEX, Toronto, Ontario, Canada: 12 commemorative covers (envelopes), 5 aviation magazines (1928–1929.)

MATTES, M. A., STANDARD OIL CO. OF CALIFORNIA, San Francisco, Calif.: 8 8½-x–14″ originals from which the following Standard Oil Co. of California "Plane Fax" advertisements show uses of aircraft were derived; "Specialists in Rugged Flying," "Flying the Yukon Air Trials for 'Black Gold,'" "Delivering Groceries to the Sierra Crest," "1,134 Hours between Majors—No Repairs," "Planting Trout by Air into Cascade Lakes," "Breaking Trail By Air for Alaska 'Train,'" "Flying Life-or-Death Missions in the High Sierra," and "300-mile Flight Wins $1,000,000 Job."

MCDONNELL AIRCRAFT CORP., St. Louis, Mo.: 5 photographs of the XV–1 helicopter; motion-picture film, "The Phantom," color-sound 15 minutes.

MCLENNAN, COL. S. G., Washington, D.C.: 2 photographs of "X–9 Strike" missile being launched from B–29.

MELOTTI, G., OF FIAT, AVIATION DIVISION, Torino, Italy: 11 blueprints (2 sets) and 13 photographs (7″ x 9½″) pertaining to the AVS–5 airplane.

MORGAN, LEN, Dallas, Texas: Books, "Sound Barrier," "Flying Lovers," "Everyman to His Post," "Trans Pacific Flight," "Wingsover the World," "Fighter Pilot," "Air Officers Guide," Squadron Admin., "Air Warfare"; Popular Flying magazines.

MORRIS, KEITH, SPORTS ILLUSTRATED: Famed color photograph of Istel making parachute jump.

MUELLER, MISS ESTER, Air Force Museum: 332 photographs, 20 negatives.

NAVY, DEPARTMENT OF THE, Washington, D.C., BUREAU OF AERONAUTICS: 3-view and other drawings of 8 naval airplanes: Consolidated NY–1, Boeing PB–2, Curtiss R3C–1, and R3C–2, Curtiss F6C–3, Martin MS–1, Huff Daland HN–2, Flias EM–2; 15 drawings of early naval aircraft, Loeing–3. BUREAU OF NAVAL WEAPONS: 2 copies each log books for Navy Curtiss Flying Boat No. C–1 and Wright Hydroaeroplane No. B–2.

NORTH AMERICAN AVIATION, AUTONETICS DIVISION, Downey, Calif.: Motion-picture film, "Inertical Navigation."

O'DEA, W. T., DEPARTMENT OF AERONAUTICS, SCIENCE MUSEUM, London, England: 17 6½–x–9½″ drawings, 21 6½–x–9½″ photographs, Vickers Vimy cockpit and controls, 2 2½–x–4½″ drawings of Vickers Vimy cockpit.

O'HEAR, W. M., UNITED AIRLINES, Chicago, Ill.: 4 photographs of United Airlines maintenance base at San Francisco, Calif.

PARRISH, WAYNE W., Washington, D.C.: 3 bound volumes of American Aviation and 1 American Aviation Daily.

POST OFFICE DEPARTMENT: Copies of texts pertaining to the first balloon airmail in the U.S.A. authorized by the Post Office Department and carried in the John Wise balloon "Jupiter" in 1859.

RICE, C. E., Odell, Nebr.: 11 newspaper clippings and 1 reprint of Chicago Sunday Tribune of May 22, 1927.

ROBINSON, BILL, CESSNA AIRCRAFT CO., Wichita, Kans.: 3 8–x–10″ prints of Cessna 310 being used for business flying.

SHEAFFER, MRS. DANIEL, Wayne, Pa.: Photographs, framed pictures, books, pamphlets, and other graphic or text items.

Sikorsky Aircraft, Stratford, Conn.: 2 photographs of C. L. Morris, pilot of Sikorsky XR–4; photographs of Sikorsky's S–38, S–39, Martin Johnson's "Osa's Ark", and "Spirit of South Africa"; 2 photographs 8″ x 10″ of Sikorsky HSS–2 helicopter.

Standard Oil Co., San Francisco, Calif.: 7 proofs of "Plane Fax" advertisements showing uses of aircraft.

Stephenson, Robert L., Lincoln, Nebr.: Photographs and negatives of the Nathaniel Dewell collection.

Strickler, Mervin K., Director of Aviation Education, Ellington Air Force Base, Texas: Complete set of textbooks used in C.A.P. cadet training program.

Strock, Robert D., Wen-Mac Corp., Los Angeles, Calif.: Control line model of P–38 having a 2-foot wingspan, and equipped with 2 gasoline engines.

Strohmeier, William D., Davis, Parsons & Strohmeier, Inc., New York, N.Y.: 4 brochures illustrated in color, describing the Piper line of aircraft, and 13 8–x–10″ glossy photographs.

Stuart, C. G. B., Hastings, Sussex, England: Air Britain Digest, unbound copies dating back to earliest issues.

Sullivan, Wendell R., Beech Aircraft Corp., Wichita, Kans.: 11 photographs and 6 3-view drawings of 1960 aircraft.

Syverson, J. M., North American Aviation, Inc., Downey, Calif.: 9 views (photographs) of the North American "X–10," and a news release.

Toda, Mannosake, Tokyo, Japan: 25 photographs of aircraft.

Truro Chamber of Commerce, North Truro, Mass.: Scrapbook of tests of German gliders made at Corn Hill, Mass., 1928.

United Airlines, Chicago, Ill.: 4 8–x–10″ photographs, 2 of the Link Electronic Jet Engine Simulator (first used by United Airlines), and 2 of the United Airlines DC–8 Jet Mainliner; 2 photographs of Laird Swallow aircraft.

U.S. Naval Photographic Center, Naval Air Station, Anacostia, D.C.: 12 photographs of A/C carriers operations, 2 photographs of balloon carriers operations, 1 photograph of R4D operating office.

U.S. Naval Research Laboratory, Washington, D.C.: Photographs of Vanguard, chart of course and related photographs.

Vadney, H. A., Department of the Navy, Washington, D.C.: Drawings of early naval aircraft.

Waters, Lt. Col. James I., USAF, Washington, D.C.: 14 8–x–10″ glossy photographs of parachutes being used to lower cargo and to reduce landing roll of aircraft.

Wells, Fred T., Pratt & Whitney Aircraft, East Hartford, Conn.: Pratt & Whitney JT3D Turbo Fan data, 8–x–10″ photograph (cutaway view), Pratt & Whitney booklet, "It's a Smaller World," Aviation Week reprint of January 26, 1959.

Wetting, Dr. Olar, Olso, Norway: Photographs of Norge and Triggvl Gran and Roald Amundsen.

ACCESSIONS

Additions to the National Aeronautical Collections received and recorded during the fiscal year 1960 totaled 287 specimens in 90 separate accessions, as listed below. Those from the Government departments are entered as transfers; others were received as gifts.

Aero Design & Engineering Co., Bethany, Okla.: Scale model of "Aero Commander" L–26, with color scheme the same as that of President Eisenhower's personal plane. (N.A.M. 1104.)

AIR FORCE, DEPARTMENT OF THE, Washington, D.C., through RYAN AERONAUTICAL Co.: Ryan X-13 "Vertijet" airplane, first jet-powered vertical takeoff aircraft to demonstrate transition from horizontal to vertical flight and return to horizontal flight configuration. (N.A.M. 1067.) DAYTON PROCUREMENT DISTRICT, Wright-Patterson Air Force Base, Ohio: 1 experimental twin-jet turboprop engine, YT-40-A-6, complete with gear boxes, contrarotating propellers, and additional duplicate assemblies. (N.A.M. 1135.) 4TH WEATHER GROUP, Suitland, Md.: Weather maps and charts used in briefing flight crew for Vice President Nixon's flight to Moscow, July 1959. (N.A.M. 1066.) AIR FORCE MUSEUM, Wright-Patterson Air Force Base, Ohio: 25 aircraft engines (N.A.M. 1088), complete rocket assembly for V-2 German guided missile, including combustion chamber and propulsion unit (N.A.M. 1062), 9 turbojet and one turboprop engines (N.A.M. 1133). AIR FORCE MUSEUM, Fairborn, Mich.: Lockheed "Sirius" monoplane, NR-211, formerly owned and used by Charles A. and Anne Morrow Lindbergh in their historic trip to the Orient and for their Atlantic survey flights. (N.A.M. 1063.) OFFICE OF THE SECRETARY, Washington, D.C.: A static test specimen of an Atlas ICBM, capable of intercontinental range and from which the first broadcast from space was made by President Eisenhower. It will be the vehicle used to launch the Mercury Man in a space capsule. (N.A.M. 1142.) WARNER ROBINS AIR FORCE BASE, Georgia: Complete E-6 radar fire-control system as used on F-86's and F-94's. (N.A.M. 1112.) PARK RIDGE DEPOT, Illinois: Collection of World War II specimens collected by order of General H. H. Arnold, USAF (recorded in National Air Museum Annual Report of 1949). (N.A.M. 1144.)

ALEXANDER, ROLAND K., Watervliet, N.Y.: Loan of 3 famous World War I combat aircraft models—the DeHavilland DH-4, Ansoldo SVA, and the Sopwith Triplane. (N.A.M. 1131.)

ALEXANDER, W. W., Grand Rapids, Mich.: Scale model of the Salmson 2-A2 reconnaissance bomber used by American Forces during World War I. The aircraft is of French design and construction. (N.A.M. 1119.)

AMERICAN HELICOPTER SOCIETY, INC., New York, N.Y.: Feinberg Memorial Award which is presented annually to "the outstanding helicopter pilot of the year." (N.A.M. 1129.)

ARMY, DEPARTMENT OF THE, BALLISTIC MISSILE AGENCY, Huntsville, Ala.: 2 complete life-sustaining space capsules and cradles used in the "Able-Baker" experiment. (N.A.M. 1122.) ORDNANCE, Washington, D.C.: Set of 11 1:24 scale models of U.S. Army rocket missiles. (N.A.M. 1134.)

BEACHEY, HILLERY, San Carlos, Calif.: Silver loving cup trophy won by Lincoln Beachey at the International Aviation Meet held in Chicago, August 12-20, 1911. (N.A.M. 1136.)

BELL AIRCRAFT CORPORATION, Buffalo, N.Y.: 1:16 scale model of the Bell X-14 jet-powered VTOL. (N.A.M. 1117.)

BELL HELICOPTER CORPORATION, Fort Worth, Tex.: Model of the Bell XV-3 Convertiplane which embodies the best features of the helicopter and fixed-wing aircraft. (N.A.M. 1097.)

BLACKALL, FREDERICK S., JR., Woonsocket, R.I.: Lougheed engine of very unique design combining features of both the 2- and 4-cycle operating principles in an 8-cycle air-cooled V-type engine, designed by Victor Lougheed. (N.A.M. 1110.)

BOEING AIRPLANE CO., Seattle, Wash.: 1:72 scale model of the Boeing B-29 "Enola Gay" which dropped the first atomic bomb on August 6, 1945 (N.A.M. 1107.); model of the Boeing Model 707 aircraft scaled 1:48, representing the first jet transport of U.S. manufacture to enter airline service (N.A.M. 1060).

BRANIFF INTERNATIONAL AIRWAYS, Dallas, Tex.: 14 equiscale models of aircraft used by Braniff Airways since the beginning of their operation (N.A.M. 1140); 1:48 scale model of the Douglas DC–7C airliner, designed for long-range and over-ocean flying (N.A.M. 1081).

BRIGHT, MR. AND MRS. ROY D., Washington, D.C.: 1 complete dinner-service setting from the Graf Zeppelin, including 10 pieces of sterling silverware and 10 pieces of Bavarian china. (N.A.M. 1064.)

BRONTE, E. B., Honolulu, Hawaii: Flyer's helmet worn by donor in flight from Oakland, Calif., to Molokui, Hawaii, July 14–15, 1927. (N.A.M. 1123.)

CAPITAL AIRLINES, Washington, D.C.: 1:48 scale model of Capital Airlines' "Viscount," first operational turboprop airliner in the U.S. (N.A.M. 1095.)

CARRUTHERS, MRS. JOHN, Pasadena, Calif.: Large leather- and cloth-bound scrapbook of early aviation items on ballooning, mostly 18th and early 19th century. (N.A.M. 1130.)

CESSNA AIRCRAFT CO., Wichita, Kans.: Scale model of Cessna L–19 Army liaison plane. (N.A.M. 1076.)

COCHRAN, JACQUELINE, New York, N.Y.: 2 trophies marking some of the high points in the distinguished career of this outstanding aviatrix—one from the Air Force Association (1948) for distinguished service; the other, the Vincent Bendix Trophy for the speed race from the West Coast to Cleveland (1938). (N.A.M. 1094.)

CONVAIR, DIVISION OF GENERAL DYNAMICS CORPORATION, San Diego, Calif.: 1:48 scale model of the all-jet Convair 880 airliner. (N.A.M. 1109.)

CROMWELL, JAMES H. R., New York, N.Y.: Portraits in oil of World War I aviators, Maj. Lufbery, Capt. Duellin, and Lt. Flauhaire, painted by the eminent French artist, Henri Farre. (N.A.M. 1059.)

DAVIS, MRS. ARLENE, Cleveland, Ohio: 2 aviation trophies from donor, 1 a loving cup given by the National Intercollegiate Flying Association and the other the Cessna Trophy for first arrival in the All-Women Transcontinental Air Race, 1951. (N.A.M. 1093.)

DEMICK, H. E., Washington, D.C.: Italian altimeter with special barometric-pressure and temperature feed-in corrective attachments. (N.A.M. 1137.)

DOOLITTLE, GEN. JAMES H., Los Angeles, Calif.: 59 medals, awards, certificates, membership cards, etc., from the personal collection of the donor. (N.A.M. 1082.)

DOUGLAS AIRCRAFT CO., INC., Washington, D.C.: Model of the Douglas DC–8 turbojet-powered transport. (N.A.M. 1099.)

DOWNING, MRS. FREDERICK B., Kinderhook, N.Y.: Flight clothing, consisting of leather coat and 3 helmets worn by the late Rear Adm. J. Lansing Callan (died 1958), who learned to fly at the Glenn H. Curtiss School in 1911, commanded Naval flight operations in Europe during World War I, served with distinction in World War II, and retired in 1948. (N.A.M. 1056.)

ECKER, HERMAN A., Fort Lauderdale, Fla.: A "Kingston" carburetor from a Roberts' aviation engine, used by the donor in 1911 on his flying boat. (N.A.M. 1073.)

EICHNER, E. C., Clifton, N.J.: An X strut from girder of "Shenandoah" and a piece of fabric from gas cell. (N.A.M. 1065.)

FLEMING, WILLIAM N., Passaic, N.J.: Model, 1:16 size, of the Aerial Experiment Association (Curtiss) "June Bug," winner of the Scientific American Trophy July 12, 1908. (N.A.M. 1108.)

FRENCH EMBASSY, Washington, D.C.: 9 French Government medals, duplicates of those awarded to members of the Lafayette Escadrille. (N.A.M. 1111.)

Garber, Paul E., Washington, D.C.: 1910 edition of Trowbridge's narrative poem "Darius Green and His Flying Machine" and 1874 edition of Jules Verne's prophetic science fiction "From the Earth to the Moon" (N.A.M. 1075); contemporary color print of Henson's "Ariel" shown taking off from tower on the plains of Hindustan (N.A.M. 1098); scale reproductions of 2 early aircraft devised by Sir George Cayley, his glider kite and his aerial top. (N.A.M. 1078.)

Glenn L. Martin Co., Baltimore, Md.: 2 1:48 scale models of the B57E and the B26 "Flak-Bait" (N.A.M. 1105); models of significant early Martin airplanes—the MB–1 bomber used during the Virginia Capes bombing tests and the Mail Express, a development of the bomber intended for carrying U.S. mail during the early part of the Air Mail Service. (N.A.M. 1138.)

Goddard, Mrs. Robert, Worcester, Mass.: Loose-leaf album of photographs of Dr. Robert Goddard and his experiments from 1915 to 1945. (N.A.M. 1072.)

Good, Dr. Walter A. and William, Bethesda, Md.: A gasoline-engined radio-controlled model airplane designed, built, and flown by the donors. It is one of the first successful examples of this type of sport aircraft, and was winner of the radio-controlled flight events in the U.S. National Model Airplane meets for 1938, 1939, 1940, and 1947. (N.A.M. 1141.)

Goodyear Aircraft Corporation, Washington, D.C.: Model of Goodyear Airship 2PG–2W, cut away to show large radar antenna enclosed in the bag. (N.A.M. 1070.)

Hartwick, Herbert, Marietta, Ga.: Model of Curtiss JN–4D World War I training plane. (N.A.M. 1103.)

Hawker Aircraft Limited, Surrey, England: Model 1:10 size of the Hawker Hurricane fighter famous for its performance in World War II, particularly in the "Battle of Britain." (N.A.M. 1106.)

Heinrich, Albert S., Fort Ashby, Va.: Trophy awarded to donor by Municipal Engineers of the City of New York for Aeroplane General Efficiency Test. (N.A.M. 1085.)

Hiller Aircraft Corporation, Palo Alto, Calif.: Scale model of the Hiller helicopter, Model 12E, with agricultural spray equipment manufactured by Agravenco. (N.A.M. 1125.)

Institute of Aeronautical Sciences, New York, N.Y.: Group of specimens including 6 aircraft models—1 of the "Akron"; an aileron; an Earhart loving cup; and 1 propeller. (N.A.M. 1118.)

Istel, J. A., Orange, Mass.: "Skydiver" sport parachute designed and used by donor in several parachute jumping competitions, both national and international. (N.A.M. 1068.)

Johnson, Harry, Julius, & Louis, Coral Gables, Fla.: Scale model of Johnson Monoplane (1911) which incorporated a number of unusual features; also a trophy cup awarded to the donors in 1912 by the Terre Haute Boosters. (N.A.M. 1057.)

Layat, Felix, Plainfield, N.J.: Message pouch dropped by Maj. H. A. Dargue at Tacopilla, Chile, during U.S. Army Pan American goodwill flight around South America. (N.A.M. 1058.)

Lockheed Aircraft Corporation, Burbank, Calif.: 5 models historically significant, designed and built by Lockheed. (N.A.M. 1121.)

Medaris, Maj. Gen. J. B., Huntsville, Ala.: Original letter and envelope carried in the recovered nose cone on its historic flight, August 8, 1957. (N.A.M. 1090.)

National Aviation Club, Washington, D.C.: Approximately 1,400 volumes of historically significant aviation books covering the field from the year 1700 to the present. (N.A.M. 1143.)

NAVY, DEPARTMENT OF THE, Washington, D.C.: Curtiss P–40 fighter aircraft of World War II face (N.A.M. 1077). BUREAU OF SHIPS, Washington, D.C.: Dummy Regulus I missile (N.A.M. 1087); Upper Darby, Pa.: Allison YJ–71–A–4 turbojet engine, one of the first of this series tested operationally (N.A.M. 1124). BUREAU OF WEAPONS, Washington, D.C.: MacDonnell FH–1 "Phantom" carrier-based turbojet-powered single-seat carrier fighter (N.A.M. 1092); model of the USN airship "Akron" constructed 1:80 full size (N.A.M. 1139). NAVAL AIR MATERIEL CENTER, Philadelphia, Pa.: Antiexposure suit, ejection seat catapult, lap belt, 2 regulators, helmet, pressure suit, and 2 wing structures (N.A.M. 1116). TECHNICAL DATA DIVISION, Washington, D.C.: 2 arresting hooks from carrier-borne aircraft, one from an FSU Vought "Crusader" and the other from an F4D–I Douglas "Skyray" (N.A.M. 1080).

NEVIN, ROBERT S., Denver, Colo.: Model of a Bleriot "Penguin" monoplane trainer used during World War I for the training of pilots, including the members of the famed Lafayette Escadrille. (N.A.M. 1096.)

NEWCOMB, CHARLES J., Trappe, Md.: Models of historically famous air vehicles, including the Fokker DR–1, Fokker T–2 (F–IV), and the balloons by Montgolfier Brothers, Prof. Charles Wise, and John Wise. (N.A.M. 1126.)

NEWKIRK, THOMAS A., Urbana, Ill.: Aircraft telegraph transmitting set and single-blade propeller. (N.A.M. 1069.)

NEW MEXICO NATIONAL GUARD, Albuquerque, N. Mex.: Japanese World War II airplane, Nakajima Ki 43–2 (Oscar II) Army fighter, a development of the famed Zero fighter. (N.A.M. 1086.)

NORD AVIATION, France: Scale model of the Nord "Griffon II" aircraft used by Maj. Andre Turcat who became first pilot in the world to exceed mach 2 in a ramjet-powered aircraft, thus winning the Harmon Trophy for 1959. (N.A.M. 1083.)

PAGE, GEORGE A., JR., Reynoldsburg, Ohio: Model of Heinrich monoplane, winner of efficiency test, Municipal Engineers of New York, November 7, 1914; also half blade from propeller of Curtiss H–16 "Big Fish." (N.A.M. 1071.)

PAN AMERICAN WORLD AIRWAYS SYSTEM, INC., New York, N.Y.: 2 models of historically significant aircraft—The Fokker F–7/3M and the Consolidated "Commodore" Flying Boat. (N.A.M. 1128.)

PORTUGUESE GOVERNMENT: 1:16 scale model of "Santa Cruz" plane which made first flight across the South Atlantic in 1922, flown by Portuguese Navy pilots Cabral and Coutinho. (N.A.M. 1113.)

PRINCE, FREDERICK, H., Old Westbury, N.Y.: American flag given to the Lafayette Escadrille by President Wilson. (N.A.M. 1115.)

REPUBLIC AVIATION CORPORATION, Farmingdale, N.Y.: Model of the Republic F–105 "Thunderchief" fighter-bomber which has been described by the USAF as "The world's most powerful one-man airplant." (N.A.M. 1074.)

RYAN, J. J., c/o Eric Wood, New York, N.Y.: Fulton Airphibian Model FA–3, the first certificated vehicle to incorporate the desirable features of both the airplane and the automobile. (N.A.M. 1089.)

SCARRITT, DANIEL, Gainesville, Fla.: 1 black leather folder containing Pilot's Identification Card #10 and Transport Pilot Rating #10 issued in 1927; Mechanic's Identification Card #10 and Mechanic's License #10 issued in 1927. (N.A.M. 1132.)

SHELL OIL CO., New York, N.Y.: Less than life-size bronze bust of Gen. James H. Doolittle sculptured by Mme. Suzanne Silvercruys. (N.A.M. 1084.)

SHOEMAKER, PETER, Baldwin, N.Y.: 1:16-size scale model of Heinrich Brothers' first airplane (1910), given by donor, builder of the model, and winner of a contest held among the students of Baldwin High School. (N.A.M. 1127.)

Sikorsky Aircraft, Division of United Aircraft Corporation, Stratford, Conn.: Model of the Sikorsky VS–300 helicopter, the first successful U.S.-built helicopter. (N.A.M. 1101.)

Simmons, Mrs. Oliver, Denver, Colo.: Original letter from Orville Wright. (N.A.M. 1120.)

Spacetronics, Inc., Washington, D.C.: Early experimental model of ground cushion vehicle capable of carrying one person. (N.A.M. 1102.)

Stuart, C. G. B., Sussex, England: A collection of approximately 30,000 aircraft photographs covering in scope all the countries of the world in which aircraft are manufactured. (N.A.M. 1061.)

Taylor, Mr. and Mrs. Reuben, Sr., El Paso, Tex.: Small American flag carried on the Wright Brothers' airplane of 1904 at Huffman's Prairie, near Dayton. (N.A.M. 1079.)

Tracy, Daniel, Lakewood, Ohio: 3 1:16 scale models—a Curtiss R3C–1, a Nieuport 11, and a Sopwith "Camel"—purchased from Daniel Tracy (N.A.M. 1100); 1:16 scale model of the Curtiss Navy Racer, the R2C–1, winner of the Pulitzer Trophy of 1923, also purchased (N.A.M. 1055).

Vickers-Armstrong, Limited, London, England: 1:16 scale model of the famous Supermarine "Spitfire," backbone of the Royal Air Force in the "Battle of Britain." (N.A.M. 1114.)

Wen-Mac Corporation, Los Angeles, Calif.: Commercial plastic 1:12 scale model of Hiller "Flying Platform" with special paint job done at Wen-Mac plant. (N.A.M. 1091.)

Respectfully submitted.

Philip S. Hopkins, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on the National Zoological Park

SIR: I have the honor to submit the following report on the activities of the National Zoological Park for the fiscal year ended June 30, 1960:

GIFTS

The past year was outstanding as far as gifts from foreign governments were concerned. In November the French community of African Republics presented President Eisenhower with "Dzimbo," a baby African elephant, which arrived in Washington after having been flown from the Brazzaville Zoo to the Vincennes Zoo in Paris and then across the Atlantic. The formal presentation was made on the White House lawn on October 12 by Dr. Jean Rinjard, associate director of the Vincennes Zoo.

President Habib Bourguiba of Tunisia presented two of the rare Dorcas gazelles to Mrs. John Eisenhower when she accompanied the President on his tour of Europe and North Africa in 1959. Having successfully passed through the required quarantine in Europe and again in New Jersey, these beautiful little antelopes arrived at the National Zoological Park on June 30, 1960.

The National Zoological Park has long been famous for breeding pygmy hippopotamuses. The sire, known as "Billy," died in October 1955, and efforts to replace him met with no success. It was therefore with particular appreciation that the Zoo accepted the offer of President William V. S. Tubman of Liberia to donate a male pygmy hippo of breeding age. Senior Keeper Charles W. Thomas was sent to Monrovia to accompany the animal on its journey to the States. The formal presentation of the hippo, named "Totota" after President Tubman's country estate, was made on February 5 by the Liberian Chargé d'Affaires Francis A. Dennis and accepted on behalf of the Smithsonian Institution by Dr. Remington Kellogg.

The arrival of an Indian rhinoceros in a zoo is always a very special event. Since the death of "Gunda" in January 1959, after nearly 20 years here, the National Zoological Park had been without an example of these great, armor-plated beasts. Early in 1959 the Forestry Service of Assam wrote to say that they had captured a rhinoceros for the National Zoo and were presenting it with the understanding that the Zoo would furnish transportation. The animal was young and barely weaned, and it was thought advisable to keep it in a corral in Gahauti, where it lived for nearly a year. It was then brought by truck from Assam to the Alipore Zoo in Calcutta, and J. Lear Grimmer, Associate Director of the National Zoological Park, flew out to accompany it to Washington. He spent a month in India, supervising the crating of the rhinoceros and getting acquainted with it, even spending several nights in the Zoo, so that "Tarun" would become thoroughly accustomed to him. They arrived in Washington on May 25, and "Tarun" by that time tipped the scales at 2,000 pounds.

In addition to the rhinoceros, the Seaboard and Western plane that flew it to Washington carried the following animals which Mr. Grimmer had acquired as gifts, purchases, or exchanges:

1 spotted leopard
1 black leopard
5 lesser pandas
1 langur
12 blossom-head parakeets
2 gray hornbills
2 Bhutan or gray peocock pheasants
10 cotton teals
3 greater ring-necked parakeets
31 lesser ring-necked parakeets
5 darters or snake birds
2 black-backed kallege pheasants
12 emerald-winged tree doves
5 yellow monitors
1 water monitor
2 pythons
5 wolf snakes

The National Zoological Park acknowledges not only the generosity of the Forestry Service of Assam but also the cooperation of R. K. Lahiri, director of the Alipore Zoo, and Gordon Mattison, American consul general in Calcutta, both of whom were most helpful in making arrangements.

Mrs. Grimmer, who accompanied her husband to India, was given a young leopard by Maj. Aubrey N. Weinman, director of the Zoo in Colombo, Ceylon, which she has recently presented to the National Zoo.

Dr. Robert E. Kuntz, stationed in Taiwan, continued to send rare and interesting specimens.

The *Washington Post* sent two newspaper carrier boys, winners of a "Junior Diplomat" contest, on a trip to Australia. While they were there, Sir Edward Hallstrom, president of the Taronga Park Trust, Sydney, gave them a pair of tree kangaroos for the National Zoological Park. The day after the kangaroos arrived in Washington, a very small young was noticed in the pouch. It is now half grown, and the trio make a most attractive exhibit.

The U.S. Coast and Geodetic Survey sent an expedition to little-known Swan Island, off the coast of Honduras, and collected for the National Zoological Park 7 Swan Island iguanas, 2 Nelson's Anolis, 3 Sceloporus spiny lizards, and a Nelson's gecko.

Ralph S. Scott, Washington big-game hunter, captured a baby tiger while on a trip to India last year. A contest was held to name it (winning entry: Mighty Mo), and it was exhibited in various branches of a restaurant chain before being formally presented to the Zoo by J. Willard Marriott, Sr. Mr. Marriott also gave the Zoo its first audio device, a magnetic tape repeater sound system which at the press of a button recites the story of the young Bengal tiger.

James D. Kennedy, American administration personnel adviser to the Indonesian National Police, stationed in Djakarta, Java, sent a fine young cassowary. He later secured another one for the Zoo as a gift from his friend Police Colonel Mohamad Jasin, chief of the Indonesian Police Mobile Brigade, who wished to express his appreciation for the training he had received at Quantico, Va. Both birds are immature and are valuable additions to the collection.

Robert F. Kennedy gave a young female Californian sea-lion which had been sent to his children as a Christmas present and had been living in their swimming pool.

The list of benefactors of the National Zoological Park is a long one, and the following record of gifts received during 1959–60 mentions only those of unusual interest:

Berger, Paul, Berwyn Heights, Md., Javan macaque.
Blackwelder, Frank, Washington, D.C., scarlet king snake.
Brower, Charles F., Falls Church, Va., white-breasted toucan.
Cali, Carl J., Silver Spring, Md., pectoral sandpiper.
Cobb, Dr. S., Boston, Mass., 4 albatrosses.
Crawford, Cecil C., Washington, D.C., Lady Amherst's pheasant.
Davis, M/Sgt. Dale E., Alhambra, Calif., tovi parakeet.
DePrato, Mario, Langley Park, Md., narrow-mouthed toad, 23 tree frogs (3 species of *Hyla*), king snake, scarlet snake, 2 cottonmouth moccasins, red-bellied water snake, 4 black racers, 7 brown water snakes, 2 southern banded water snakes, mud snake, 4 green snakes, chicken snake (*Elaphe*), 2 chicken snakes (*Deirochelys*), 21 spadefoot toads, 4 American toads, 3 bullfrogs, ring-necked snake, 2 mud turtles, box turtle, 62 newts.
Devaris, Capt. Dionisios P., Washington, D.C., Javan macaque.
Ereckson, Mrs. Lucy, Arlington, Va., coatimundi.
Fischer, Mrs. Milla, Washington, D.C., ocelot.
Fish and Wildlife Service, Boothbay Harbor, Maine, 6 double-crested cormorants, 6 gulls, 2 harbor seals. In cooperation with the Fish and Wildlife Service W. Widman, senior keeper at the National Zoological Park, collected at Kent Island, Eastern Shore, Md., 6 buffleheads, 4 black ducks, 3 pintails, 2 ring-necked ducks, 6 whistling swans; at Mills Island, Salisbury, Md., 4 American egrets, 4 Louisiana herons, 2 glossy ibises, 3 great white herons; and at Washington, N.C., 3 royal terns, 4 gray pelicans.
Garret, Col. E. W., Fort Leavenworth, Kans., night monkey.
Gray, Steven and Loraine, Bethesda, Md., black-and-red tamarin.
Hanson, Charles, Port Clinton, Ohio, massasauga, fox snake.
Harris, Lester E., Takoma Park, Md., 14 timber rattlesnakes, hog-nosed snake,
Harrison, Allen M., boa constrictor.
Hawes, Miss Elizabeth, Washington, D.C., 2 white-throated capuchins.
Isaac, Mrs. Lee, Arlington, Va., Formosan macaque.
Joy, J. E., St. Angelo, Texas, 5 diamond-back rattlesnakes, prairie rattlesnake.

Koltisko, Mrs. Frances M., Falls Church, Va., yellow-naped parrot.

Kuntz, Dr. Robert E., Taipei, Taiwan, 2 pangolins, 2 Formosan ferret badgers, 2 Formosan masked civets, 3 Formosan giant flying squirrels, 9 snorkel vipers. 12 Formosan cobras, Pallas's sea eagle.

Letner, George, Washington, D.C., 5 canaries, peach-faced lovebird.

Munro, George, Calcutta, India, 2 sloth bears.

O'Dunne, David, Baltimore, Md., woolly monkey.

Palmer, Harold C., Atlanta, Ga., 2 Australian black snakes, tiger snake, brown snake, Australian copperhead, 4 carpet pythons, Australian monitor.

Perz, Miss Louise, Sellersville, Pa., hill mynah.

Royal Zoological Society, Amsterdam, Holland, 6 European cormorants.

Salzman, Aaron, Alexandria, Va., blue-fronted parrot.

Santos, John, Washington, D.C., 9 lineolated parrots, 14 cockatiels.

Schmidt's Pet Shop, Washington, D.C., 12 jewelfishes, 38 "Jack Dempseys."

Thomas, Charles, Washington, D.C., 2 European goldfinches, 4 European bullfinches, 4 slate-colored juncos, mockingbird.

Tuck, Robert, Jr., Point of Rocks, Md., Cuban ground boa.

Xanten, William, Jr., Washington, D.C., pygmy rattlesnake, mangrove water snake.

PURCHASES

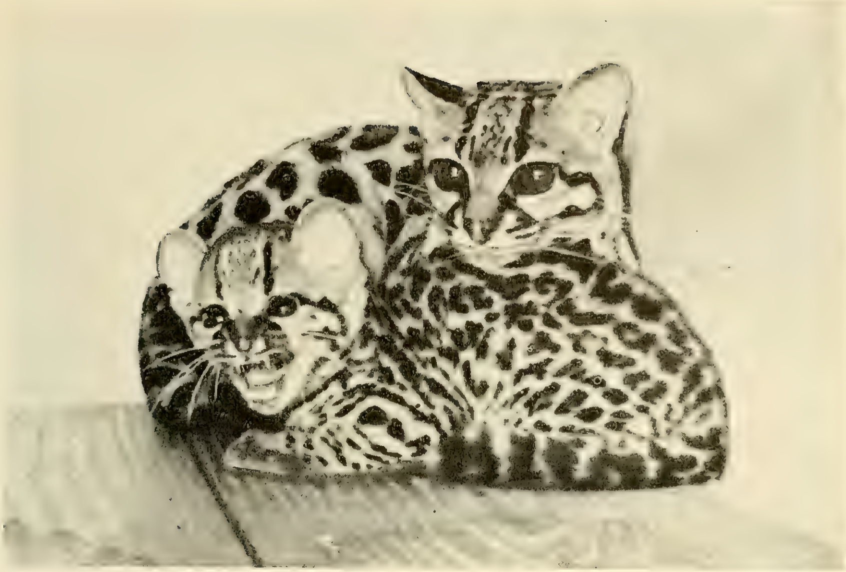
Among important purchases of the year were a maned wolf from Argentina and a pair of black leopards. The collection of birds of prey was augmented by the receipt of a white-breasted Philippine sea eagle, black eagle, red-footed falcon, Lanner falcon, bearded vulture or lammergeyer, and two imperial eagles. Other purchases of interest were as follows:

2 pottos
2 bush babies
2 drills
3 langur monkeys
African pangolin
2 fennecs
3 jackals
2 yaks
3 sarus cranes
2 McBride's bustards
2 starlings
2 touracous
12 whydahs
3 Indian pygmy teals
3 red-breasted geese
2 Tokay geckos
2 ring-tailed genets
2 white-faced mongooses
2 zorillas
4 crested rats
black genet
3 hyrax
3 California sea-lions
2 painted storks
Indian adjutant stork
4 Cuban trogans
2 golden woodpeckers
8 crocodile birds
12 sunbirds
3 ring-necked teal
10 Quaker parakeets
king cobra
Galapagos tortoise

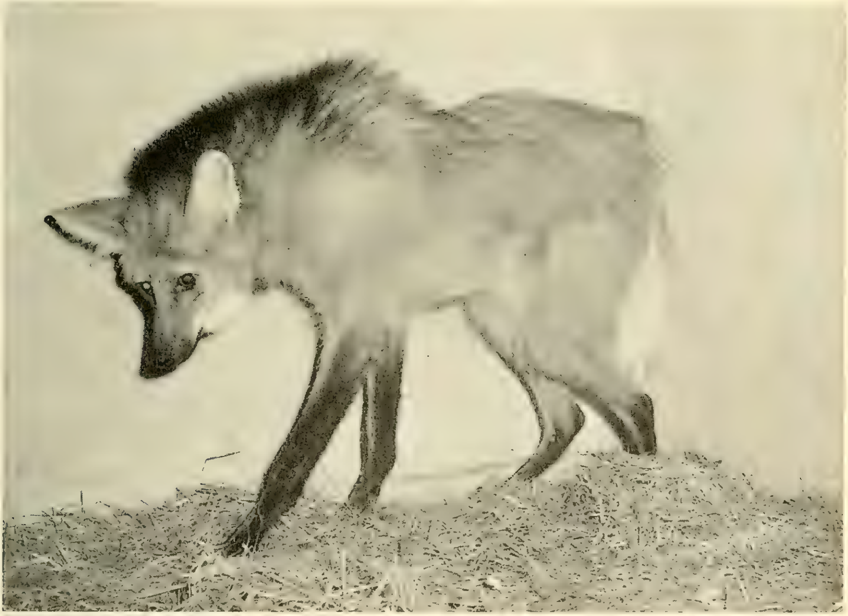
EXCHANGES

By the judicious use of exchanges with other zoos and with individuals the following animals were obtained:

Alipore Zoo, Calcutta, India, 5 yellow monitors, 1 water monitor, 2 pythons, 5 wolf snakes, 3 greater ring-necked parakeets, 12 blossom-headed parakeets, 31 lesser ring-necked parakeets, 2 grey hornbills, 5 darters, 10 cotton teal, 2 peacock pheasants, 2 black-headed kaleeges, 12 emerald-winged doves.

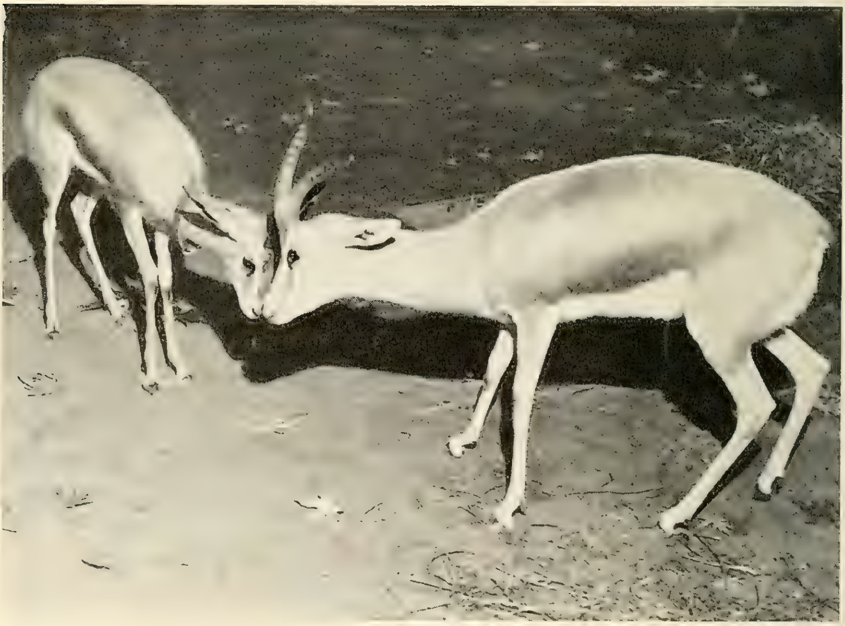


1. A margay kitten, shown here with its mother, is the first ever born in the National Zoological Park. (Photograph by Arthur Ellis, *Washington Post.*)

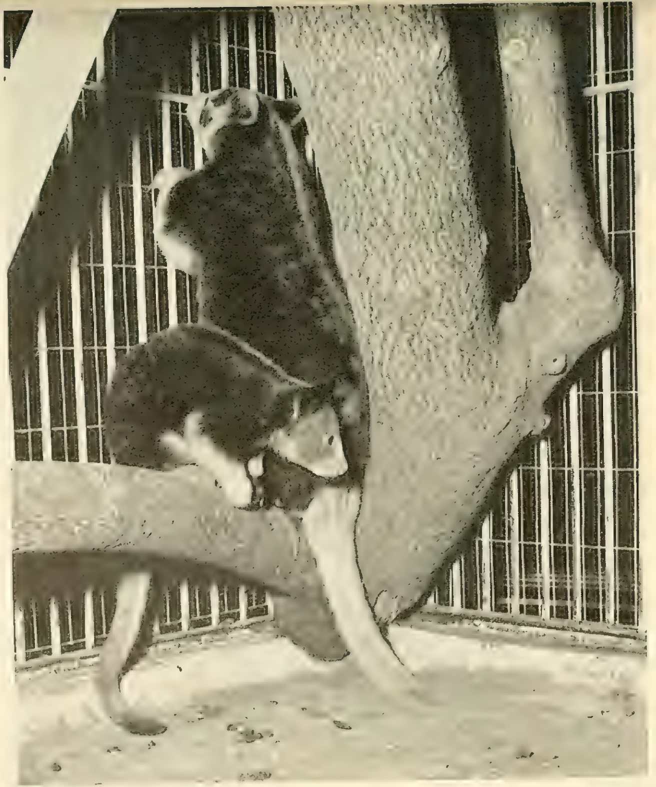


2. Maned wolf from the Argentine, a species not hitherto represented in the National Zoological Park for many years.

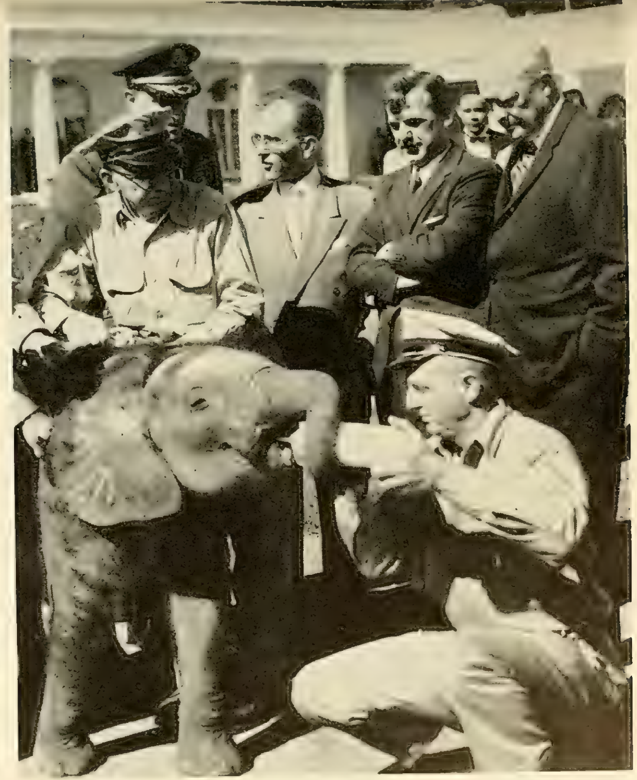
1. Indian rhinoceros, "Tarum," shown here with Senior Keeper Charles Thomas. National Zoological Park.



2. A pair of dorcas gazelles, gifts from the President of Tunisia to President Eisenhower's daughter-in-law. These graceful little antelopes are found in North Africa and Southwest Asia. National Zoological Park. (Photograph by Beall, *Washington Daily News.*)

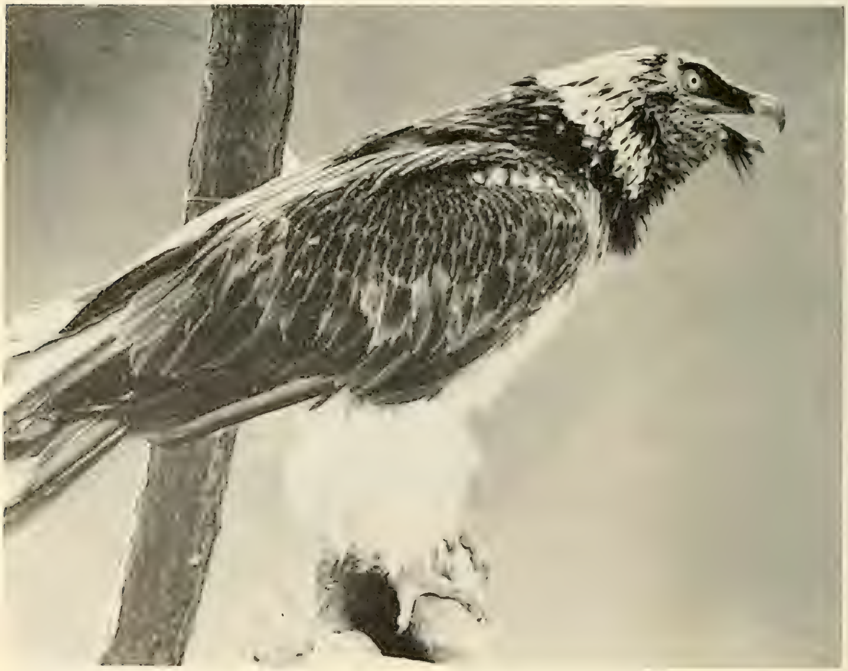


1. Tree kangaroo with half-grown young. These animals are a rich, glossy brown, with cream-colored snout, paws, and tail. National Zoological Park.



2. Presentation of baby African elephant to President Eisenhower on the White House lawn, October 12, 1959. Left to right: Wilbur Hale, supervisory keeper at the National Zoological Park; Dr. Jean Rijard, Associate Director of the Paris Zoo; J. Lear Grimmer, Associate Director of the National Zoological Park; President Eisenhower; Supervisory Keeper Cecil Gray. (Photograph by Randolph Routt, *Washington Evening Star.*)

1. Formal presentation of pygmy hippopotamus to National Zoological Park, February 5, 1960. Left to right: Dr. Theodore Reed, Director of the National Zoological Park; Dr. Remington Kellogg, Assistant Secretary of the Smithsonian Institution; Francis A. Dennis, Liberian Chargé d'Affaires; Senior Keeper Charles Thomas.



2. The lammergeyer, or bearded vulture, is the largest European bird of prey. National Zoological Park. (Photograph by McNamee. *Washington Post.*)

Berlin Zoo, W. Germany, 2 striped African mongooses.

Cleveland Zoo, Cleveland, Ohio, 6 black ducks.

Crandon Park Zoo, Miami, Fla., 2 red-breasted teal.

Deer Forest, Coloma, Mich., 2 aoudads.

Ellison, Robert J., Falls Church, Va., 3 desert iguanas, horned lizard, whip-tail lizard, desert tortoise.

Hanson, Charles, Fort Clinton, Ohio, 4 Blanding's semi-box turtles, Butler's garter snake.

Houston Zoo, Houston, Tex., 2 coral snakes, coach-whip snake, hognosed snake, indigo snake, bull snake, speckled snake.

Meade, Richard, Hyattsville, Md., 2 Audubon's caracaras.

New York Zoo, New York, N.Y., 2 boa constrictors, 2 Japanese water snakes, 2 anacondas, 2 puff adders, 2 mamushi (Ancistrodon).

Payne, Mrs. Edward, College Park, Md., 2 saw-whet owls.

Philadelphia Zoo, Philadelphia, Pa., 2 coscoroba swans, 2 ruddy sheldrakes, 2 South American sheldrakes, 2 Egyptian geese, 2 wood rails, black-faced ibis, long-eared owl.

Quebec Zoo, Orsainville, Quebec, 6 evening grosbeaks, 2 white-capped sparrows.

Riverside Park Zoo, Scottsbluff, Nebr., 2 golden eagles.

Rochester Zoo, Rochester, N.Y., 3 sika deer.

San Antonio Zoo, San Antonio, Tex., 5 reddish egrets, 4 cattle egrets, 6 roseate spoonbills, 2 roadrunners, ocellated turkey, 2 white-faced glossy ibises, 2 chachalacas, 2 cacomistles, 3 nine-banded armadillos.

Washington Park Zoo, Portland, Oreg., Columbian ground squirrel, coyote, mountain beaver, 3 murres, raven, 6 Pacific rattlesnakes, 2 rubber boas, bullsnake.

Zoorama, New Market, Va., guanaco, 2 fallow deer, peccary.

BIRTHS AND HATCHINGS

The number of young born in the Zoo was gratifying, although there were, as always, some disappointments. The pair of Pallas's cats, purchased last year, had young but did not raise them. The snow leopard, which had a cub two years ago that was successfully hand-raised, gave birth again, and this time the young was left with the mother and did not survive. For the first time in 30 years, timber wolves were born here, but none survived. On the other hand, a pair of margays had a kitten which the mother successfully raised, the first time for this Zoo. A hybrid macaque born in the Zoo is of interest because its sire was the famous Philippine macaque that in 1952 soared 37 miles into space encased in an Aerobee rocket shot from the Air Force Base at Holloman, N. Mex. It and a female (since deceased) were the first primates to reach such an altitude and survive.

Following the procedure of previous years, all births and hatchings are listed below, whether or not the young were successfully raised. In many instances the record of animals having bred in captivity is of importance. The tree kangaroo previously mentioned (p. 132) is included because, while it was not actually born here, the date of birth of kangaroos is customarily listed as the date when they are first observed in the pouch.

MAMMALS

Common name	*Scientific name*	*Number*
Rat kangaroo	*Potorous* sp	2
Galago	*Galago crassicaudatus*	1
Potto	*Perodicticus potto*	1
Capuchin	*Cebus* sp	1
Hybrid macaque	*Macaca philippensis* × *M. irus*	1
Barbary ape	*Macaca sylvanus*	1
Sooty mangabey	*Cercocebus fuliginosus*	1
DeBrazza's guenon	*Cercopithecus neglectus*	2
Chimpanzee	*Pan satyrus*	1
Two-toed sloth	*Choloepus didactylus*	3
Prairie dog	*Cynomys ludovicianus*	11
Flying squirrel	*Glaucomys volans*	3
Four-toed jerboa	*Allactaga tetradactyla*	1
Fat-tailed gerbil	*Pachyuromys duprasi*	3
African porcupine	*Hystrix galeata*	5
Dingo	*Canis antarcticus*	9
Timber wolf	*Canis lupus*	4
Cape hunting dog	*Lycaon pictus*	6
European bear	*Ursus arctos*	2
Grizzly bear	*Ursus horribilis*	1
Hybrid bear	*Thalarctos maritimus* × *Ursus middendorffi*	1
Coatimundi	*Nasua narica*	1
Newman's genet	*Genetta genetta*	1
African water civet	*Atilax paludinosus*	2
Pallas's cat	*Felis manul*	1
Margay cat	*Felis weidii tigrina*	1
Puma	*Felis concolor*	3
Eastern bobcat	*Lynx rufus*	3
Snow leopard	*Panthera uncia*	1
Grant's zebra	*Equus burchelli boehmi*	2
Llama	*Lama glama*	3
Brown fallow deer	*Dama dama*	4
White fallow deer		6
Axis deer	*Axis axis*	2
Red deer	*Cervus elaphus*	3
Elk	*Cervus canadensis*	1
Sika deer	*Cervus nippon*	5
Virginia deer	*Odocoileus virginianus*	3
Reindeer	*Rangifer tarandus*	4
Sitatunga	*Tragelaphus spekei*	1
Barbary sheep	*Ammotragus lervia*	3

BIRDS

Mute swan	*Cygnus olor*	3
Whooper swan	*Olor cygnus*	3
Canada goose	*Branta canadensis*	6

Common name	*Scientific name*	*Number*
Eider duck*	*Somateria molissima*	3
Gadwall*	*Anas strepera*	5
European widgeon*	*Anas penelope*	5
Wood duck	*Aix sponsa*	36
Mandarin duck	*Dendronessa galericulata*	5
White-winged scoter	*Melanitta fusca deglandia*	1
Wild turkey	*Meleagris gallopavo*	6
Red junglefowl	*Gallus gallus*	8
Golden pheasant	*Chrysolophus pictus*	1
Kelp gull	*Larus dominicanus*	4

*Hatched from eggs imported from Iceland.

REPTILES

Slate water snake	*Enhydris plumbea*	33
Florida water snake	*Natrix pictiventris*	26
Cottonmouth moccasin	*Ancistrodon piscivorus*	1
Massasauga	*Sistrurus catenatus*	5
Timber rattlesnake	*Crotalus horridus*	5
Snapping turtle	*Chelydra serpentina*	23
Mobile turtle	*Pseudemys elegans*	52
Painted turtle	*Chrysemys picta*	9
Red-bellied turtle	*Pseudemys rubriventris*	15

FISHES

White Cloud Mountain fish	*Tanichthys albonubes*	Many

The importance of a zoological collection rests, to a large extent, upon the diversity and scope of its taxonomic representation throughout the whole of the Animal Kingdom. The National Zoological Park has enjoyed some measure of success in efforts to add representative species belonging to little-known or absent families.

The total number of accessions for the year was 1,312. This includes gifts, purchases, exchanges, deposits, births, and hatchings. Several minor species which are best displayed in large numbers do not have an individual count, merely being listed as "many."

STATUS OF THE COLLECTION

Class	Orders	Families	Species or subspecies	Individuals
Mammals	15	53	245	625+
Birds	21	80	362	1, 070+
Reptiles	4	23	176	484+
Amphibians	2	10	19	102+
Fish	4	8	19	114
Arthropods	3	3	3	Many
Mollusks	1	1	1	Many
Total	50	178	825	2, 395+

ANIMALS IN THE COLLECTION ON JUNE 30, 1960

MAMMALS

MONOTREMATA

Family and common name	*Scientific name*	*Number*
Tachyglossidae:		
Echidna, or spiny anteater	*Tachyglossus aculeatus*	1

MARSUPIALIA

Didelphidae:		
Opossum	*Didelphis marsupialis*	1
Dasyuridae:		
Tasmanian devil	*Sarcophilus harrisii*	1
Phalangeridae:		
Lesser flying phalanger	*Petaurus norfolcensis*	3
Phascolomidae:		
Hairy-nosed wombat	*Lasiorhinus latifrons*	2
Mainland wombat	*Wombatus hirsutus*	1
Macropodidae:		
Rat kangaroo	*Potorous* sp	6
Ursine tree kangaroo	*Dendrolagus ursinus*	3

INSECTIVORA

Erinaceidae:		
European hedgehog	*Erinaceus europaeus*	1

PRIMATES

Lorisidae:		
Great galago	*Galago crassicaudatus*	2
Senegal galago	*Galago senegalensis*	3
Slow loris	*Nycticebus coucang*	1
Common potto	*Perodicticus potto*	2
Cebidae:		
Night monkey	*Aotus trivirgatus*	6
Red uakari	*Cacajao rubicundus*	1
Brown capuchin monkey White-throated capuchin Capuchin	*Cebus capucinus*	10
Squirrel monkey	*Saimiri sciureus*	4
Colombian black spider monkey	*Ateles fusciceps*	1
Spider monkey	*Ateles geoffroyi*	2
Woolly monkey	*Lagothrix pygmaea*	2
Callithricidae:		
Cottontop marmoset	*Callithrix jacchus*	1
Black-and-red tamarin	*Saquinus nigricollis*	1
Cercopithecidae:		
Toque, or bonnet monkey	*Macaca sinica*	3
Javan macaque	*Macaca irus mordax*	2
Crab-eating macaque	*Macaca irus*	1
Philippine macaque	*Macaca philippinensis*	2
Macaque hybrid	*Macaca philippinensis* X *Macaca irus*	1

Family and common name	Scientific name	Number
Cercopithecidae—Continued		
Rhesus monkey	*Macaca mulatta*	4
Formosan monkey	*Macaca cyclopis*	2
Red-faced macaque	*Macaca speciosa*	1
Barbary ape	*Macaca sylvanus*	12
Moor macaque	*Macaca maurus*	1
Gray-cheeked mangabey	*Cercocebus albigena*	1
Agile mangabey	*Cerocebus galeritus agilis*	1
Golden-bellied mangabey	*Cercocebus galeritus chrysogaster*	1
Red-crowned mangabey	*Cercocebus torquatus*	1
Sooty mangabey	*Cercocebus fuliginosus*	5
Crested mangabey	*Cercocebus aterrimus opdenboschii*	2
Black-crested mangabey	*Cercocebus aterrimus*	3
Hamadryas baboon	*Papio hamadryas*	1
Chacma baboon	*Papio comatus*	1
Mandrill	*Mandrillus sphinx*	1
Gelada baboon	*Theropithecus gelada*	1
Vervet guenon	*Cercopithecus aethiops pygerythrus*	1
Green guenon	*Cercopithecus aethiops sabaeus*	2
Guenon, hybrid	*Cercopithecus aethiops* X *C.a. pygerythrus*	2
Moustached monkey	*Cercopithecus cephus*	2
Diana monkey	*Cercopithecus diana*	1
Preussi's guenon	*Cercopithecus l'hoesti preussi*	1
DeBrazza's guenon	*Cercopithecus neglectus*	3
White-nosed guenon	*Cercopithecus nictitans*	1
Lesser white-nosed guenon	*Cercopithecus nictitans petaurista*	1
Allen's monkey	*Allenopithecus nigroviridis*	2
Spectacled, or Phayre's langur	*Presbytis phayrei*	1
Entellus monkey	*Presbytis entellus*	2
Pongidae:		
White-handed gibbon	*Hylobates lar*	6
Wau-wau gibbon	*Hylobates moloch*	1
Gibbon, hybrid	*Hylobates agilis* X *H. lar pileatus*	1
Gibbon, hybrid	*Hylobates lar* X *H.* sp	2
Sumatran orangutan	*Pongo pygmaeus*	2
Bornean orangutan	*Pongo pygmaeus abelii*	1
Chimpanzee	*Pan satyrus*	4
Gorilla	*Gorilla gorilla*	2

EDENTATA

Family and common name	Scientific name	Number
Myrmecophagidae:		
Giant anteater	*Myrmecophaga tridactyla*	1
Bradypodidae:		
Two-toed sloth	*Choloepus didactylus*	6
Dasypodidae:		
Nine-banded armadillo	*Dasypus novemcinctus*	3

PHOLIDOTA

Family and common name	*Scientific name*	*Number*
Manidae:		
Giant pangolin	*Manis temminckii*	1
LAGOMORPHA		
Leporidae:		
Domestic rabbit	*Oryctolagus cuniculus*	4
Jack rabbit	*Lepus californicus melanotis*	1
RODENTIA		
Aplodontidae:		
Mountain beaver	*Aplodontia rufa*	1
Sciuridae:		
Gray squirrel (black)	*Sciurus carolinensis*, melanistic phase	2
Gray squirrel (albino)	*Sciurus carolinensis*	2
Fox squirrel	*Sciurus niger*	1
Columbian ground squirrel	*Citellus columbianus*	1
White-tailed antelope ground squirrel	*Citellus leucurus*	1
Giant Indian squirrel	*Ratufa indica*	3
Asiatic squirrel	*Callosciurus nigrovittatus*	1
Formosan tree squirrel	*Callosciurus erythraeus*	5
Asiatic forest squirrel	*Callosciurus caniceps*	3
Striped ground squirrel	*Lariscus insignis*	1
Long-nosed squirrel	*Dremomys rufigenis*	1
Woodchuck, or groundhog	*Marmota monax*	2
Prairie dog	*Cynomys ludovicianus*	Many
Eastern chipmunk	*Tamias striatus*	1
Eastern chipmunk (albino)	*Tamias striatus*	1
Formosan flying squirrel	*Petaurista grandis*	2
Eastern flying squirrel	*Glaucomys volans volans*	16
Cricetidae:		
Hamster	*Mesocricetus auratus*	3
Vesper rat	*Nyctomys sumichrasti*	1
White-footed mouse	*Peromyscus* sp	2
Pine vole	*Pitymys pinetorum*	1
Muskrat	*Ondatra zibethicus*	1
Gerbil	*Gerbillus pyramidum*	2
Lesser Egyptian gerbil	*Gerbillus gerbillus*	1
Fat-tail gerbil	*Pachyuromys duprasi*	19
Hairy-tailed jird	*Sekeetamys calurus*	1
Jird	*Meriones* sp	12
Jird	*Meriones* sp	2
Muridae:		
Egyptian spiny mouse	*Acomys cahirinus*	10
Egyptian spiny mouse	*Acomys dimidiatus*	Many
Multimammate mouse	*Mastomys* sp	2
Crested rat	*Lophiomys* sp	4
Slender-tailed cloud rat	*Phloeomys cumingii*	1
Gliridae:		
African dormouse	*Graphiurus murinus*	1

Family and common name	*Scientific name*	*Number*
Dipodidae:		
Lesser, or desert, jerboa	*Jaculus jaculus*	1
Hystricidae:		
Malay porcupine	*Acanthion brachyura*	1
African porcupine	*Hystrix galeata*	10
Erethizontidae:		
Prehensile-tailed porcupine	*Coendou prehensilis*	1
Caviidae:		
Guinea-pig	*Cavia porcellus*	6
Hydrochoeridae:		
Capybara	*Hydrochoerus hydrochoeris*	1
Dinomyidae:		
Red agouti	*Dinomys branickii*	1
Chinchillidae:		
Chinchilla	*Chinchilla chinchilla*	2
Peruvian viscaccia	*Lagidium viscaccia*	1
CARNIVORA		
Canidae:		
Dingo	*Canis antarcticus*	3
Coyote	*Canis latrans*	1
Black-backed jackal	*Canis mesomelas*	3
Timber wolf	*Canis lupus nubilus*	2
Texas red wolf	*Canis niger rufus*	2
Red fox	*Vulpes fulva*	1
Platinum fox	*Vulpes fulva*	2
Fennec	*Fennecus zerda*	2
Gray fox	*Urocyon cinereoargenteus*	1
Big-eared fox	*Otocyon megalotis*	2
Raccoon dog	*Nyctereutes procyonoides*	1
Maned wolf	*Chrysocyon jubatus*	1
Cape hunting dog	*Lycaon pictus*	3
Ursidae:		
Spectacled bear	*Tremarctos ornatus*	1
Himalayan bear	*Selenarctos thibetanus thibetanus*	2
Japanese black bear	*Selenarctos thibetanus japonicus*	1
Korean bear	*Selenarctos thibetanus ussuricus*	2
Black bear	*Euarctos americanus*	2
Alaskan brown bear	*Ursus* sp	1
European brown bear	*Ursus arctos*	3
Iranian brown bear	*Ursus arctos occidentalis*	2
Alaskan Peninsula bear	*Ursus gyas*	2
Grizzly bear	*Ursus horribilis*	2
Sitka brown bear	*Ursus sitkensis*	2
Polar bear	*Thalarctos maritimus*	2
Hybrid bear	*Thalarctos maritimus* X *Ursus middendorffi*	4
Malay sun bear	*Helarctos malayanus*	3
Sloth bear	*Melursus ursinus*	2

Family and common name	*Scientific name*	*Number*
Procyonidae:		
Raccoon	*Procyon lotor*	9
Red coatimundi	*Nasua nasua*	1
Coatimundi	*Nasua narica*	5
Cacomistle, or Ring-tailed cat	*Bassariscus astutus*	2
Kinkajou	*Potos flavus*	4
Olingo	*Bassaricyon gabbi*	2
Lesser panda	*Ailurus fulgens*	6
Mustelidae:		
Black-footed ferret	*Mustela nigripes*	1
Short-tailed weasel	*Mustela erminea*	1
Marten	*Martes americana*	1
Fisher	*Martes pennanti*	1
Tayra	*Eira barbara*	1
Grison	*Galictis vittata*	1
Zorilla, or Striped weasel	*Ictonyx capensis*	2
Wolverine	*Gulo luscus*	1
American badger	*Taxidea taxus*	1
Golden-bellied ferret-badger	*Helictis moschata subaurantiaca*	5
Common skunk	*Mephitis mephitis*	4
California spotted skunk	*Spilogale putorius phenax*	1
African small-clawed otter	*Lutra cinerea*	1
South American flat-tailed otter	*Pteronura brasiliensis*	1
Malayan small-clawed otter	*Amblonyx cinerea*	1
Viverridae:		
Genet	*Genetta genetta neumanii*	6
Genet (black phase)	*Genetta genetta neumanii*	1
Formosan spotted civet	*Viverricula indica*	2
Ground civet	*Viverra tangalunga*	1
Linsang	*Prionodon linsang*	1
African palm civet	*Nandinia binotata*	1
Formosan masked civet	*Paguma larvata taivana*	3
Binturong	*Arctictis binturong*	1
African gray mongoose	*Herpestes ichneumon*	1
White-faced mongoose	*Bdeogale* sp	2
African water civet	*Atilax paludinosus*	4
Striped African mongoose	*Crossarchus fasciatus*	2
White-tailed civet	*Ichneumia albicauda*	2
Cryptoproctidae:		
Fossa	*Cryptoprocta ferox*	1
Hyaenidae:		
Striped hyena	*Hyaena hyaena*	2
Spotted hyena	*Crocuta crocuta germinans*	1
Felidae:		
Jungle cat	*Felis chaus*	1
Pallas's cat	*Felis manul*	2
Serval cat	*Felis serval*	3
Ocelot	*Felis pardalis*	2
Margay cat	*Felis wiedii tigrina*	3
Puma	*Felis concolor*	4
Lynx	*Lynx canadensis*	1

Family and common name	*Scientific name*	*Number*
Felidae—Continued		
Bobcat	*Lynx rufus*	3
Leopard	*Panthera pardus*	5
Black leopard	*Panthera pardus*	3
Lion	*Panthera leo*	3
Bengal tiger	*Panthera tigris*	3
Jaguar	*Panthera onca*	1
Snow leopard	*Panthera uncia*	3
Cheetah	*Acinonyx jubata*	2
PINNIPEDIA		
Otariidae:		
California sea-lion	*Zalophus californianus*	5
Patagonian sea-lion	*Otaria flavescens*	1
TUBULIDENTATA		
Orycteropodidae:		
Aardvark, or antbear	*Orycteropus afer*	1
PROBOSCIDEA		
Elephantidae:		
African elephant	*Loxodonta africana*	2
Indian elephant	*Elephas maximus*	1
HYRACOIDEA		
Procaviidae:		
Hyrax	*Procavia syriaca*	1
PERISSODACTYLA		
Equidae:		
Mongolian wild horse	*Equus przewalskii*	1
Kiang, or Asiatic wild ass	*Equus kiang*	1
Burro, or donkey	*Equus asinus*	1
Grant's zebra	*Equus burchelli boehmi*	3
Grevy's zebra	*Equus grevyi*	3
Tapiridae:		
Brazilian tapir	*Tapirus terrestris*	1
Rhinocerotidae:		
Great one-horned Indian rhinoceros	*Rhinoceros unicornis*	1
White, or square-lipped, rhinoceros	*Ceratotherium simum*	2
ARTIODACTYLA		
Tayassuidae:		
Collared peccary	*Pecari tajacu*	4
Hippopotamidae:		
Hippopotamus	*Hippopotamus amphibius*	3
Pygmy hippopotamus	*Choeropsis liberiensis*	4
Camelidae:		
Llama	*Lama glama*	6
Guanaco	*Lama glama guanicoe*	3
Alpaca	*Lama pacos*	4
Bactrian camel	*Camelus bactrianus*	2

Family and common name	*Scientific name*	*Number*
Cervidae:		
Brown fallow deer	*Dama dama*	11
White fallow deer	*Dama dama*	9
Axis deer	*Axis axis*	4
Red deer	*Cervus elaphus*	7
American elk	*Cervus canadensis*	5
Sika deer	*Cervus nippon*	9
Père David's deer	*Elaphurus davidianus*	1
Virginia deer	*Odocoileus virginianus*	9
Reindeer	*Rangifer tarandus*	13
Forest caribou	*Rangifer caribou*	1
Giraffidae:		
Okapi	*Okapia johnstoni*	1
Nubian giraffe	*Giraffa camelopardalis*	3
Antilocapridae:		
Pronghorn	*Antilocapra americana*	5
Bovidae:		
Sitatunga	*Tragelaphus spekii*	2
Eland	*Taurotragus oryx*	2
Anoa	*Anoa depressicornis*	2
Zebu	*Bos indicus*	1
Yak	*Poephagus grunniens*	4
Gaur	*Bibos gaurus*	3
African buffalo	*Syncerus caffer*	1
American bison	*Bison bison*	2
Wisent, or European bison	*Bison bonasus*	2
Dorcas gazelle	*Gazella dorcas*	2
Rocky Mountain goat	*Oreamnos americanus*	2
Tahr	*Hemitragus jemlahicus*	1
Ibex	*Capra ibex*	1
Blue sheep	*Pseudois nayaur*	1
Aoudad	*Ammotragus lervia*	5
Dall sheep	*Ovis dalli*	2

BIRDS

SPHENISCIFORMES

Spheniscidae:		
King penguin	*Aptenodytes patagonica*	4
Adélie penguin	*Pygoscelis adeliae*	5

STRUTHIONIFORMES

Struthionidae:		
Ostrich	*Struthio camelus*	1

RHEIFORMES

Rheidae:		
Rhea	*Rhea americana*	1

CASUARIIFORMES

Casuariidae:		
Cassowary	*Casuarius* sp	2
Dromiceidae:		
Emu	*Dromicius novaehollandiae*	4

PROCELLARIIFORMES

Family and common name	*Scientific name*	*Number*
Diomedeidae:		
Black-footed albatross	*Diomedea nigripes*	2
Laysan albatross	*Diomedea immutabilis*	1

PELECANIFORMES

Pelecanidae:		
Rose-colored pelican	*Pelecanus onocrotalus*	2
White pelican	*Pelecanus erythrorhynchus*	3
Brown pelican	*Pelecanus occidentalis*	5
Phalacrocoracidae:		
Double-crested cormorant	*Phalacrocorax auritus*	4
European cormorant	*Phalacrocorax carbo*	6
Anhingidae:		
Indian darter	*Plotus melanogaster*	3

CICONIIFORMES

Ardeidae:		
Reddish egret	*Dichromanassa rufescens*	4
Reddish egret (white phase)	*Dichromanassa rufescens*	1
Cattle egret	*Bubulcus ibis*	4
American egret	*Casmerodius albus*	1
Snowy egret	*Leucophoyx thula*	2
Great white heron	*Ardea occidentalis*	2
Louisiana heron	*Hydranassa tricolor*	3
Black-crowned night heron	*Nycticorax nycticorax*	12
Little blue heron	*Florida caerulea*	1
Least bittern	*Ixobrychus exilis*	1
Tiger bittern	*Tigrisoma lineatum*	3
Cochleariidae:		
Boat-billed heron	*Cochlearius cochlearius*	1
Balaenicipitidae:		
Shoebill	*Balaeniceps rex*	1
Ciconiidae:		
Indian adjutant stork	*Leptoptilos dubius*	1
White-bellied stork	*Abdimia sphenorhyncha*	2
Threskiornithidae:		
White ibis	*Eudocimus albus*	2
Scarlet ibis	*Eudocimus ruber*	2
Black-faced ibis	*Theristicus melanopis*	1
Black-headed ibis	*Threskiornis melanocephala*	1
White-faced glossy ibis	*Plegadis mexicana*	2
Eastern glossy ibis	*Plegadis falcinellus*	2
Roseate spoonbill	*Ajaia ajaja*	8
Phoenicopteridae:		
Chilean flamingo	*Phoenicopterus chilensis*	2
Cuban flamingo	*Phoenicopterus ruber*	1
Old World flamingo	*Phoenicopterus antiquorum*	1

ANSERIFORMES

Anhimidae:		
Crested screamer	*Chauna torquata*	4

Family and common name	*Scientific name*	*Number*
Anatidae:		
Coscoroba swan	*Coscoroba coscoroba*	2
Mute swan	*Cygnus olor*	5
Whooper swan	*Olor cygnus*	2
Whistling swan	*Olor columbianus*	7
Trumpeter swan	*Olor buccinator*	2
Black swan	*Chenopis atrata*	3
Egyptian goose	*Alopochen aegyptiacus*	2
White-fronted goose	*Anser albifrons*	3
Indian bar-headed goose	*Eulabeia indica*	5
Emperor goose	*Philacte canagica*	2
Blue goose	*Chen caerulescens*	6
Lesser snow goose	*Chen hyperborea hyperborea*	2
Greater snow goose	*Chen hyperborea atlantica*	5
Ross's goose	*Chen rossii*	4
Red-breasted goose	*Branta ruficollis*	2
Canada goose Lesser Canada goose Cackling goose White-cheeked goose	*Branta canadensis*	30
Canada goose × blue goose, hybrid	*Branta canadensis* × *Chen caerulescens*	2
Wood duck	*Aix sponsa*	Many
Wood duck × Red-headed duck, hybrid	*Aix sponsa* × *Aythya americana*	1
Pintail duck	*Anas acuta*	4
Chestnut-breasted teal	*Anas castanea*	2
Ringed, or ring-necked, teal	*Anas leucophrys*	3
Gadwall	*Anas strepera*	5
European wigeon	*Anas penelope*	5
Mallard duck	*Anas platyrhynchos*	19
Mallard duck, albino	*Anas platyrhynchos*	1
Mallard duck × American pintail duck, hybrid.	*Anas platyrhynchos* × *Anas acuta*	1
Indian spotted-bill duck	*Anas poecilorhyncha*	1
Black duck	*Anas rubripes*	11
Greater scaup duck	*Aythya marila*	7
Lesser scaup duck	*Aythya affinis*	5
Red-headed duck	*Aythya americana*	10
Ring-necked duck	*Aythya collaris*	2
Canvasback duck	*Aythya valisineria*	7
Bufflehead duck	*Bucephala albeola*	3
Black-bellied tree duck	*Dendrocygna autumnalis*	8
Fulvous tree duck	*Dendrocygna bicolor*	1
Mandarin duck	*Dendronessa galericulata*	10
Baldpate	*Mareca americana*	13
American white-winged scoter	*Melanitta fusca deglandi*	1
Rosy-billed pochard	*Metopiana peposaca*	1
Red-crested pochard	*Netta rufina*	1
Cotton teal	*Nettapus coromandelianus*	10
Comb duck	*Sarkidiornis melanota*	1
Northern eider duck	*Somateria mollissima borealis*	2

Family and common name	*Scientific name*	*Number*
Anatidae—Continued		
American eider duck	*Somateria mollissima dresseri*	2
South American shelldrake	*Casarca cana*	2
Ruddy shelldrake	*Casarca ferruginea*	2
European shell duck	*Tadorna tadorna*	1
FALCONIFORMES		
Cathartidae:		
Andean condor	*Vultur gryphus*	1
King vulture	*Sarcoramphus papa*	1
Black vulture	*Coragyps atratus*	6
White-backed vulture	*Pseudogyps africanus*	1
Ruppell's vulture	*Gyps rueppellii*	3
Turkey vulture	*Cathartes aura*	9
Sagittariidae:		
Secretarybird	*Sagittarius serpentarius*	2
Accipitridae:		
African yellow-billed kite	*Milvus migrans*	2
Brahminy kite	*Haliastur indus*	1
Black-faced hawk	*Leucopternis melanops*	1
Red-tailed hawk	*Buteo jamaicensis*	3
Swainson's hawk	*Buteo swainsoni*	1
Great black hawk	*Ictinaetus malayensis*	1
Crane hawk, or red-footed falcon	*Falco vespertinus*	1
Golden eagle	*Aquila chrysaetos*	3
Imperial eagle	*Aquila heliaca*	2
White-breasted Philippine sea eagle	*Haliaetus leucogaster*	1
Pallas's sea eagle	*Haliaetus leucoryphus*	1
Bald eagle	*Haliaetus leucocephalus*	5
Buzzard eagle	*Buteo poecilochrous*	1
Harpy eagle	*Harpia harpyja*	1
Guianan crested eagle	*Morphnus guianensis*	1
Monkey-eating eagle	*Pithecophaga jefferyi*	1
Bateleur eagle	*Terathopius ecaudatus*	3
Bearded vulture	*Gypaetus barbatus*	1
Pandionidae:		
American osprey	*Pandion haliaetus carolinensis*	2
Falconidae:		
Large-billed, or lanner, falcon	*Falco biarmicus*	1
Sparrow hawk	*Falco sparverius*	5
Duck hawk	*Falco peregrinus anatum*	1
Forest falcon	*Micrastur semitorquatus*	2
Chimango	*Milvago chimango*	2
Audubon's caracara	*Polyborus cheriway*	3
South American caracara	*Polyborus plancus*	3
GALLIFORMES		
Megapodiidae:		
Brush turkey	*Alectura lathami*	1
Cracidae:		
Blue-cered curassow	*Crax alberti*	1
Wattled curassow	*Crax globulosa*	2
Panama curassow	*Crax panamensis*	1
Nocturnal curassow	*Nothocrax urumutum*	1

Family and common name	*Scientific name*	*Number*
Cracidae—Continued		
Chachalaca	*Ortalis vetula mccalli*	2
White-headed piping guan	*Pipile cumanensis*	1
Phasianidae:		
Erckel's francolin	*Francolinus erckeli*	2
Hildebrandt's francolin	*Francolinus hildebrandti*	1
Bob-white	*Colinus virginianus*	4
Japanese quail	*Coturnix coturnix*	1
Argus pheasant	*Argusianus argus*	1
Golden pheasant	*Chrysolophus pictus*	3
Red junglefowl	*Gallus gallus*	13
Nepal pheasant	*Gennaeus leucomelanus*	4
Black-backed kaleege pheasant	*Gennaeus melanonotus*	2
Peafowl	*Pavo cristatus*	13
Ring-necked pheasant	*Phasianus colchicus*	4
Ring-necked pheasant, albino	*Phasianus colchicus*	1
Bhutan, or gray peacock pheasant	*Polyplectron bicalcaratum*	2
Reeves's pheasant	*Syrmaticus reevesi*	2
Numididae:		
Vulturine guineafowl	*Acryllium vulturinum*	4
Meleagrididae:		
Ocellated turkey	*Agriocharis ocellata*	2
Wild turkey	*Meleagris gallopavo*	8

GRUIFORMES

Family and common name	*Scientific name*	*Number*
Gruidae:		
Siberian crane	*Grus leucogeranus*	1
Demoiselle crane	*Anthropoides virgo*	1
Sarus crane	*Antigone antigone*	2
Psophiidae:		
Trumpeter	*Psophia crepitans*	2
Rallidae:		
Cayenne wood rail	*Aramides cajanea*	2
Virgina rail	*Rallus limicola*	1
South Pacific swamp-hen	*Porphyrio poliocephalus*	1
American coot	*Fulica americana*	1
Eurypygidae:		
Sun bittern	*Europyga helias*	1
Cariamidae:		
Cariama, or seriama	*Cariama cristata*	1
Otididae:		
McBride's bustard	*Otis tetrax*	2

CHARADRIIFORMES

Family and common name	*Scientific name*	*Number*
Jacanidae:		
Common jaçana	*Jacana spinosa*	3
Haematopodidae:		
Oystercatcher	*Haematopus ostralegus*	2
Charadriidae:		
Golden plover	*Charadrius apricarius*	2
Australian banded plover	*Zonifer tricolor*	6
South American lapwing	*Belonopterus cayennensis*	2
Killdeer	*Charadrius vociferus*	1
Crocodile bird	*Pluvianus aegyptus*	7

Family and common name	*Scientific name*	*Number*
Scolopacidae:		
Pectoral sandpiper	*Erolia melanotos*	1
Recurvirostridae:		
Black-necked stilt	*Himantopus mexicanus*	1
Burhinidae:		
South American thick-knee	*Burhinus bistriatus*	1
Stercorariidae:		
MacCormick's skua	*Catharacta maccormicki*	4
Laridae:		
Ring-billed gull	*Larus delawarensis*	3
Kelp gull	*Larus dominicanus*	5
Laughing gull	*Larus atricilla*	1
Herring gull	*Larus argentatus*	3
Great black-backed gull	*Larus marinus*	1
Silver gull	*Larus novaehollandiae*	8
Royal tern	*Thalasseus maximus*	2
Alcidae:		
Atlantic, or common, murre	*Uria aalge*	2
COLUMBIFORMES		
Columbidae:		
Band-tailed pigeons	*Columba fasciata*	2
High-flying Budapest pigeon	*Columba livia*	1
Black-billed pigeon	*Columba nigrirostris*	1
Crowned pigeon	*Goura victoria*	2
Indian emerald-winged tree dove	*Chalcophaps indica*	11
Bleeding-heart dove	*Gallicolumba luzonica*	2
Diamond dove	*Geopelia cuneata*	1
Plain-breasted ground dove	*Columbigallina minuta*	6
Ground dove	*Columbigallina passerina*	5
Ring-necked dove	*Streptopelia decaocto*	7
Blue-headed ring dove	*Streptopelia tranquebarica*	2
White-winged dove	*Zenaida asiatica*	1
Mourning dove	*Zenaidura macroura*	3
PSITTACIFORMES		
Psittacidae:		
Kea parrot	*Nestor notabilis*	2
Red lory	*Domicella garrula*	1
Banksian cockatoo	*Calyptorhynchus magnificus*	1
White cockatoo	*Kakatoe alba*	2
Solomon Islands cockatoo	*Kakatoe ducrops*	1
Sulphur-crested cockatoo	*Kakatoe galerita*	4
Bare-eyed cockatoo	*Kakatoe sanguinea*	5
Great red-crested cockatoo	*Kakatoe moluccensis*	1
Leadbeater's cockatoo	*Kakatoe leadbeateri*	7
Cockatiel	*Nymphicus hollandicus*	15
Yellow-and-blue macaw	*Ara ararauna*	3
Red-and-blue macaw	*Ara chloroptera*	3
Red-blue-and-yellow macaw	*Ara macao*	2
Petz's parakeet	*Aratinga canicularis*	1
Rusty-cheeked parrot	*Aratinga pertinax*	2

Family and common name	*Scientific name*	*Number*
Psittacidae—Continued		
Yellow-naped parrot	*Amazona auropalliata*	5
Finsch's parrot	*Amazona finschi*	1
Blue-fronted parrot	*Amazona aestiva*	1
Red-fronted parrot	*Amazona bodini*	1
Double yellow-headed parrot	*Amazona oratrix*	3
Lineolated parakeet	*Bolborhynchus lineolatus*	7
White-winged parakeet	*Brotogeris versicolurus*	1
Blossom-headed parakeet	*Psittacula cyanocephala*	12
Greater ring-necked parakeet	*Psittacula eupatria*	3
Rose-breasted parakeet	*Psittacula alexandri*	1
Lesser ring-necked parakeet	*Psittacula krameri*	6
Barraband's parakeet	*Polytelis swainsoni*	1
Quaker parakeet	*Myopsittacus monachus*	20
Budgerigar, or grass parakeet	*Melopsittacus undulatus*	Many
Rosy-faced lovebird	*Agapornis roseicollis*	1
Masked lovebird	*Agapornis personata*	2
Yellow-thighed caique	*Pionites leucogaster xanthomeria*	1
CUCULIFORMES		
Musophagidae:		
Purple touraco	*Tauraco persa*	1
South African touraco	*Tauraco corythaix*	2
White-bellied go-away-bird	*Corythaixoides leucogaster*	1
Plantain-eater	*Crinifer africanus*	1
Cuculidae:		
Koel	*Eudynamys scolopacea*	1
Roadrunner	*Geococcyx californianus*	3
STRIGIFORMES		
Tytonidae:		
Barn owl	*Tyto alba*	1
Strigidae:		
Great horned owl	*Bubo virginianus*	6
Screech owl	*Otus asio*	3
Spectacled owl	*Pulsatrix perspicillata*	1
Malay fishing owl	*Ketupa ketupu*	2
Snowy owl	*Nyctea nyctea*	3
Barred owl	*Strix varia*	16
Short-eared owl	*Asio flammeus*	1
Saw-whet owl	*Aegolius acadius*	2
COLIIFORMES		
Coliidae:		
Mousebird	*Colius striatus*	1
TROGONIFORMES		
Trogonidae:		
Cuban trogan	*Priotelus temnurus*	3

CORACIIFORMES

Family and common name	*Scientific name*	*Number*
Alcedinidae:		
Kookaburra	*Dacelo gigas*	3
Momotidae:		
Motmot	*Momotus lessoni*	1
Coraciidae:		
Lilac-breasted roller	*Coracias caudata*	2
Indian roller	*Coracias benghalensis*	2
Bucerotidae:		
Pied hornbill	*Anthracoceros malabaricus*	1
Abyssinian ground hornbill	*Bucorvus abyssinicus*	1
Grey hornbill	*Tockus birostris*	4
Black-and-white casqued hornbill	*Bycanistes subcylindricus*	1
Great black casqued hornbill	*Ceratogymna atrata*	1

PICIFORMES

Family and common name	*Scientific name*	*Number*
Capitonidae:		
Asiatic red-fronted barbet	*Megalaima asiatica*	1
Asiatic great barbet	*Megalaima virens*	1
Toucan barbet	*Semnornis ramphastinus*	1
Ramphastidae:		
White-lined toucanet	*Aulacorhynchus albivittatus*	2
Sulphur-breasted toucan	*Ramphastos carinatus*	1
Picidae:		
Golden-backed woodpecker	*Brachypternus benghalensis*	2
Scaly-bellied woodpecker	*Picus squamatus*	2

PASSERIFORMES

Family and common name	*Scientific name*	*Number*
Cotingidae:		
Orange cock-of-the-rock	*Rupicola rupicola*	1
Pipridae:		
Long-tailed manakin	*Chiroxiphia linearis*	2
Tyrannidae:		
Kiskadee flycatcher	*Pitangus sulphuratus*	1
Pittidae:		
Indian pitta	*Pitta brachyura*	3
Alaudidae:		
Skylark	*Alauda arvensis*	1
Shore lark	*Eremophila alpestris*	2
Corvidae:		
Magpie	*Pica pica*	5
Yellow-billed magpie	*Pica nuttalli*	1
Asiatic tree pie	*Crypsirina formosae*	2
Magpie jay	*Calocitta formosa*	1
Blue jay	*Cyanocitta cristata*	1
Steller's jay	*Cyanocitta stelleri*	4
European jay	*Garrulus glandarius*	2
African white-necked crow	*Corvus albus*	2
American crow	*Corvus brachyrhynchos*	3
Raven	*Corvus corax*	2
Indian crow	*Corvus splendens*	1

Family and common name	*Scientific name*	*Number*
Corvidae—Continued		
Formosan red-billed pie	*Kitta caerulea*	9
Hunting crow	*Kitta chinensis*	1
Inca jay	*Xanthoura yncas*	2
Cracticidae:		
White-backed piping crow	*Gymnorhina hypoleuca*	1
Paridae:		
Red-headed tit	*Aegithaliscus concinnus*	1
Great tit	*Parus major*	1
Tufted titmouse	*Parus bicolor*	1
Chickadee	*Parus atricapillus*	1
Sittidae:		
Chestnut-bellied nuthatch	*Sitta castanea*	2
Timaliidae:		
Rusty-cheeked scimitar babbler	*Pomatorhinus erythrogenys*	1
Indian scimitar babbler	*Pomatorhinus horsfieldii*	1
Tit babbler	*Yuhina flavicollis*	1
Black-headed sibia	*Heterophasia capistrata*	2
Silver-eared mesia	*Mesia argentauris*	3
Pycnonotidae:		
Red-vented bulbul	*Pycnonotus cafer*	1
White-cheeked bulbul	*Pycnonotus leucogenys*	2
White-eared bulbul	*Pycnonotus leucotis*	1
Troglodytidae:		
Carolina wren	*Thryothorus ludovicianus*	1
Mimidae:		
Mockingbird	*Mimus polyglottos*	1
Turdidae:		
Robin, albino	*Turdus migratorius*	1
Cliff chat	*Thamnolaea cinnamomeiventris*	2
Sturnidae:		
Rose-colored pastor	*Pastor roseus*	1
Burchell's glossy starling	*Lamprocolius purpureus*	1
Long-tailed glossy starling	*Lamprotornis caudatus*	1
Amethyst starling	*Spreo* sp	1
Tri-colored starling	*Spreo superbus*	1
Starling	*Sturnus vulgaris*	2
Jungle mynah	*Acridotheres tristis*	1
Lesser hill mynah	*Gracula religiosa indica*	1
Greater Indian hill mynah	*Gracula religiosa intermedia*	2
Nectariniidae:		
Violet-backed sunbird	*Anthreptes longuemarei*	3
Scarlet-chested sunbird	*Chalcomitra rubescens*	1
Eastern double-collared sunbird	*Cinnyris mediocris*	2
Variable sunbird	*Cinnyris venustus*	2
Scarlet-tufted malachite sunbird	*Nectarinia johnstoni*	2
Beautiful sunbird	*Nectarinia pulchella*	1
Tecasse sunbird	*Nectarinia tacazze*	1
Zosteropidae:		
White-eye	*Zosterops palpebrosa*	3
Coerebidae:		
Blue honey-creeper	*Cyanerpes cyaneus*	2

Family and common name	*Scientific name*	*Number*
Parulidae:		
Ovenbird	*Seiurus aurocapillus*	1
Ploceidae:		
Red-naped widowbird	*Coliuspasser laticauda*	11
Giant whydah	*Diatropura procne*	2
Baya weaver	*Ploceus baya*	4
Vitelline masked weaver	*Ploceus vitellinus*	4
Mahali weaver	*Ploceipasser mahali*	1
Red bishop weaver	*Euplectes orix*	2
Yellow-crowned bishop weaver	*Euplectes afra*	4
White-headed nun	*Lonchura maja*	6
Cut-throat weaver finch	*Amadina fasciata*	1
Lavender finch	*Estrilda coerulescens*	2
Strawberry finch	*Estrilda amandava*	7
Red-eared waxbill	*Estrilda astrild*	1
Common waxbill	*Estrilda troglodytes*	2
Zebra finch	*Poephila castanotis*	26
Gouldian finch	*Poephila gouldiae*	1
Java finch	*Padda oryzivora*	15
Icteridae:		
Rice grackle	*Psomocolax oryzivora*	1
Purple grackle	*Quiscalus quiscula*	1
Swainson's grackle	*Holoquiscalus lugubris*	1
Boat-tailed grackle	*Megaquiscalus major*	3
Shiny cowbird	*Molothrus bonariensis*	1
Colombian red-eyed cowbird	*Tangavius armenti*	1
Blackbird	*Turdus merula*	2
Red-breasted marshbird	*Leistes militaris*	4
Troupial	*Icterus icterus*	1
Thraupidae:		
Black-and-white tanager	*Cissopis leveriana*	1
Yellow-rumped tanager	*Ramphocelus icteronotus*	2
Passerini's tanager	*Ramphocelus passerinii*	1
Red tanager	*Pyranga rubra*	1
Fringillidae:		
Rice grosbeak	*Oryzoborus crassirostris*	1
Evening grosbeak	*Hesperiphona vespertina*	6
Brazilian cardinal	*Paroaria cucullata*	1
Black-throated cardinal	*Paroaria gularis*	1
Cardinal	*Richmondena cardinalis*	12
European goldfinch	*Carduelis caniceps*	3
European goldfinch X canary, hybrid	*Carduelis carduelis* X *Serinus canarius*	1
Canary	*Serinus canarius*	5
Green finch	*Chloris chloris*	2
Lesser yellow finch	*Sicalis luteola*	2
European bullfinch	*Pyrrhula rubicilla*	4
Melodious grassquit	*Tiaris canora*	1
Chaffinch	*Fringilla coelebs*	2
Slate-colored junco	*Junco hyemalis*	5
Buff-throated saltator	*Saltator maximus*	2
Tawny-bellied seedeater	*Sporophila minuta*	4

Family and common name	*Scientific name*	*Number*
Fringillidae—Continued		
Song sparrow	*Melospiza melodia*	1
Dickcissel	*Spiza americana*	8
White-throated sparrow	*Zonotrichia albicollis*	6
White-crowned sparrow	*Zonotrichia leucophrys*	2

REPTILES

LORICATA

Alligatoridae:		
Caiman	*Caiman sclerops*	1
American alligator	*Alligator mississipiensis*	10
Chinese alligator	*Alligator sinensis*	2
Crocodilidae:		
Broad-nosed crocodile	*Osteolaemus tetraspis*	2
African crocodile	*Crocodylus niloticus*	2
Narrow-nosed crocodile	*Crocodylus cataphractus*	1
Salt-water crocodile	*Crocodylus porosus*	1
American crocodile	*Crocodylus acutus*	2
Gavialidae:		
Indian gavial	*Gavialis gangeticus*	1

CHELONIA

Chelydridae:		
Snapping turtle	*Chelydra serpentina*	Many
Alligator snapping turtle	*Macrochelys temminckii*	4
Kinosternidae:		
Musk turtle	*Sternotherus odoratus*	3
Mud turtle	*Kinosternon subrubrum*	7
South American mud turtle	*Kinosternon cruentatum*	2
Emydidae:		
Box turtle	*Terrapene carolina*	Many
Three-toed box turtle	*Terrapene c. triunguis*	3
Western box turtle	*Terrapene ornata*	1
Florida box turtle	*Terrapene bauri*	1
Kura box turtle	*Curora amboinensis*	2
Diamondback turtle	*Malaclemys terrapin*	5
Map turtle	*Graptemys geographica*	2
False map turtle	*Graptemys pseudogeographica*	2
Barbour's turtle	*Graptemys barbouri*	5
Painted turtle	*Chrysemys picta*	Many
Cumberland turtle	*Pseudemys scripta troostii*	23
South American red-lined turtle	*Pseudemys scripta callirostris*	6
Yellow-bellied turtle	*Pseudemys scripta scripta*	15
Red-bellied turtle	*Pseudemys rubriventris*	8
Mobile turtle	*Pseudemys elegans*	12
Florida water turtle	*Pseudemys floridana*	17
Central American turtle	*Pseudemys ornata*	2
Cuban water turtle	*Pseudemys decussata*	1
Chicken turtle	*Deirochelys reticularia*	2
Spotted turtle	*Clemmys guttata*	2
Wood turtle	*Clemmys insculpta*	6
Pacific pond turtle	*Clemmys marmorata marmorata*	1
North African pond turtle	*Clemmys leprosa*	2

Family and common name	*Scientific name*	*Number*
Emydidae—Continued		
European pond turtle	*Emys orbicularis*	3
Blanding's turtle	*Emys blandingii*	3
Indian fresh-water turtle	*Batagur baska*	1
Reeves's turtle	*Geoclemys reevesii*	4
Testudinidae:		
Giant Aldabra tortoise	*Testudo elephantina*	2
Galapagos tortoise	*Testudo elephantopus*	1
Galapagos tortoise	*Testudo vicina*	2
Duncan Island tortoise	*Testudo ephippium*	2
South American tortoise	*Testudo tabulata*	1
Desert tortoise	*Testudo agassizii*	2
European tortoise	*Testudo graeca*	1
Radiated tortoise	*Testudo radiata*	1
Pelomedusidae:		
African water turtle	*Pelomedusa subrufa*	2
African black mud turtle	*Pelusios nigricans*	1
Amazon spotted turtle	*Podocnemis unifilis*	10
Chelydidae:		
South American side-necked turtle	*Batrachemys nasuta*	2
Australian side-necked turtle	*Chelodina longicollis*	3
Small side-necked turtle	*Hydromedusa tectifera*	2
Large side-necked turtle	*Phrynops hilarii*	11
Krefft's turtle	*Emydura krefftii*	3
Murray turtle	*Emydura macquarrii*	6
South American gibba turtle	*Mesoclemmys gibba*	3
Flat-headed turtle	*Platemys platycephala*	7
Trionychidae:		
Florida soft-shelled turtle	*Trionyx ferox*	6
African soft-shelled turtle	*Trionyx triunguis*	2

SAURIA

Family and common name	*Scientific name*	*Number*
Gekkonidae:		
Gecko	*Tarentola mauritanica*	1
Giant gecko	*Gekko stentor*	1
Nelson's gecko	*Aristelliger nelsoni*	1
Indian gecko	*Gekko* sp	1
Iguanidae:		
Common iguana	*Iguana iguana*	3
Swan Island iguana	*Iguana delicatissma*	4
Carolina anole	*Anolis carolinensis*	Many
Nelson's anolis	*Anolis nelsoni*	2
Giant anole	*Anolis equestris*	1
Texas horned lizard	*Phrynosoma cornutum*	1
Horned lizard	*Phrynosoma platyrhinos*	1
Crested lizard	*Leiocephalus varius*	3
Blue scaly lizard	*Sceloporus cyanogenys*	1
Red scaly lizard	*Sceloporus poinsettii*	2
Fence lizard	*Sceloporus undulatus*	1
Ameiva lizard	*Ameiva a. ameiva*	1
British Guiana green lizard	*Centropyx striatus*	1
Black iguana	*Ctenosaura acanthura*	1
Desert iguana	*Dipsosaurus dorsalis*	3

Family and common name	*Scientific name*	*Number*
Scincidae:		
Mourning skink	*Egernia luctuosa*	2
White's skink	*Egernia whitei*	4
Greater five-lined skink	*Eumeces fasciatus*	7
Sand skink	*Scincus officinalis*	5
Stump-tailed skink	*Tiliqua rugosa*	1
Malayan skink	*Mabuya multifasciata*	3
Gerrhosauridae:		
Plated lizard	*Gerrhosaurus major*	2
Teiidae:		
Black tegu	*Tupinambis nigropunctatus*	1
Yellow tegu	*Tupinambis teguixin*	1
Whiptail lizard	*Cnemidophorus gularis*	1
Varanidae:		
Duméril's monitor lizard	*Varanus dumerili*	1
Indian monitor lizard	*Varanus flavescens*	6
Indian monitor lizard	*Varanus salvator*	1
Australian lace monitor	*Varanus varius*	3
Clouded monitor	*Varanus nebulosus*	1
Helodermatidae:		
Mexican beaded lizard	*Heloderma horridum*	2
Beaded lizard (black phase)	*Heloderma horridum*	1
Gila monster	*Heloderma suspectum*	2
Anguidae:		
Glass lizard	*Ophisaurus ventralis*	3
SERPENTES		
Boidae:		
Anaconda	*Eunectes murinus*	3
Tree boa	*Boa enydris enydris*	1
Cook's tree boa	*Boa enydris cooki*	11
Boa constrictor	*Constrictor constrictor*	1
Emperor boa	*Constrictor imperator*	1
Rubber boa	*Charina bottae*	2
Cuban ground boa	*Tropidophis melanura*	1
Rainbow boa	*Epicrates cenchria*	2
Cuban tree boa	*Epicrates angulifer*	5
Ball python	*Python regius*	1
African python	*Python sebae*	1
Indian rock python	*Python molurus*	4
Regal python	*Python reticulatus*	1
Colubridae:		
Water snake	*Natrix sipedon*	1
European grass snake	*Natrix natrix*	1
Southern banded water snake	*Natrix fasciata*	2
Diamond-backed water snake	*Natrix rhombifera*	1
Brown water snake	*Natrix taxispilota*	4
Red-bellied water snake	*Natrix erythrogaster*	2
Island water snake	*Natrix insularum*	1
Mangrove snake	*Natrix compressicauda*	1
Garter snake	*Thamnophis sirtalis sirtalis*	3
California red-sided garter snake	*Thamnophis sirtalis infernalis*	1

Family and common name	*Scientific name*	*Number*
Colubridae—Continued		
Eastern hog-nosed snake	*Heterodon platyrhinos*	1
Ring-necked snake	*Diadophis punctatus edwardsii*	1
Black racer	*Coluber constrictor constrictor*	4
Red racer	*Masticophis flagellum*	1
Green snake	*Opheodrys aestivus*	1
Indigo snake	*Drymarchon corais couperi*	1
Texas indigo snake	*Drymarchon corais*	1
Asiatic rat snake	*Elaphe taeniura*	2
Lesser Indian rat snake	*Elaphe carinata*	2
Pilot black snake	*Elaphe obsoleta obsoleta*	7
Fox snake	*Elaphe vulpina*	1
Corn snake	*Elaphe obsoleta guttata*	3
Lindheimer's rat snake	*Elaphe obsoleta lindheimeri*	1
Chicken snake	*Elaphe quadrivittata*	1
Aesculapian snake	*Elaphe longissima*	1
Bull snake	*Pituophis sayi*	2
King snake	*Lampropeltis getulus getulus*	3
Speckled king snake	*Lampropeltis getulus holbrooki*	3
California king snake	*Lampropeltis getulus californiae*	2
Sonoran king snake	*Lampropeltis getulus splendida*	1
Scarlet king snake	*Lampropeltis doliata doliata*	2
Milk snake	*Lampropeltis triangulum*	2
Tropical king snake	*Lampopeltis polyzonus*	1
Cat-eyed snake	*Leptodeira annulata*	1
DeKay's snake	*Storeria dekayi*	1
Flying snake	*Chrysopelea ornata*	1
Twig, or vine, snake	*Thelotornis kirtlandi*	1
Green whip snake	*Dryophis prasinus*	1
File snake	*Simocephalus capensis*	1
Glossy snake	*Arizona elegans*	1
European whip snake	*Zamenis gemonensis*	1
Wolf snake	*Lycodon flavomaculatus*	4
Elapidae:		
Indian cobra	*Naja naja*	4
Taiwan cobra	*Naja naja atra*	17
Egyptian cobra	*Naja haje*	1
Krait	*Bungarus multicinctus*	1
Acrochordidae:		
Elephant trunk snake	*Acrochordus javanicus*	1
Crotalidae:		
Southern copperhead	*Ancistrodon contortrix contortrix*	1
Northern copperhead	*Ancistrodon contortrix mokeson*	4
Western broad-banded copperhead	*Ancistrodon contortrix laticinctus*	1
Water moccasin, or cottonmouth	*Ancistrodon piscivorus*	5
Cantil	*Ancistrodon bilineatus*	1
Mamushi	*Ancistrodon halys blomhoffi*	2
Asian snorkel viper	*Ancistrodon acutus*	3
Green palm viper	*Trimeresurus gramineus*	2
Green palm viper	*Trimeresurus stejnegeri*	3

Family and common name	*Scientific name*	*Number*
Crotalidae—Continued		
Wagler's pit viper	*Trimeresurus wagleri*	1
Mamushi, or Asiatic viper	*Trimeresurus elegans*	2
Habu, or Asiatic viper	*Trimeresurus flavoviridis*	1
Timber rattlesnake	*Crotalus horridus*	1
Southern Pacific rattlesnake	*Crotalus viridis helleri*	6
Prairie rattlesnake	*Crotalus viridis viridis*	1
Western diamondback rattlesnake	*Crotalus atrox*	6

AMPHIBIANS

CAUDATA

Amphiumidae:		
Congo eel	*Amphiuma means*	3
Ambystomidae:		
Tiger salamander	*Ambystoma tigrinum*	1
Salamandridae:		
Red-bellied newt	*Diemictylus pyrrhogaster*	10
Red-spotted newt	*Diemictylus viridescens*	25

SALIENTIA

Bufonidae:		
American toad	*Bufo americanus*	2
Giant toad	*Bufo marinus*	5
Cuban toad	*Bufo peltocephalus*	6
Pelobatidae:		
Spadefoot toad	*Scaphiopus holbrooki*	5
Pipidae:		
Surinam toad	*Pipa pipa*	20
Leptodactylidae:		
Colombian horned frog	*Ceratophrys calcarata*	2
Argentine horned frog	*Ceratophrys ornata*	1
Hylidae:		
Barking tree frog	*Hyla gratiosa*	1
Green tree frog	*Hyla cinerea*	1
Gray tree frog	*Hyla versicolor*	4
Microhylidae:		
Narrow-mouthed toad	*Microhyla olivacea*	1
Ranidae:		
African bull frog	*Rana adspersa*	7
American bull frog	*Rana catesbeiana*	3
Green frog	*Rana clamitans*	5
Leopard frog	*Rana pipiens*	Many

ARTHROPODS

DECAPODA

Cenobitidae:		
Land hermit crab	*Coenobita clypeatus*	Many

ARANEIDA

Theridiidae:		
Black-widow spider	*Latrodectus mactans*	1

ORTHOPTERA

Family and common name	Scientific name	Number
Blattidae:		
Tropical giant cockroach	*Blaberus giganteus*	Many

MOLLUSKS

PULMONATA

Family and common name	Scientific name	Number
Planorbidae:		
Pond snail	*Helisoma trivolvis*	Many

FISHES

NEOCERATODONTOIDEI

Family and common name	Scientific name	Number
Lepidosirenidae:		
South American lungfish	*Lepidosiren paradoxa*	1
Protopteridae:		
African lungfish	*Protopterus annectens*	2

OSTARIOPHYSOIDEI

Family and common name	Scientific name	Number
Characidae:		
Metynnis	*Metynnis roosevelti*	1
Black tetra	*Gynmocorymbus ternetzi*	3
Gymnotidae:		
African knifefish	*Sternarchella schotti*	1
Cyprinidae:		
Zebra fish	*Brachydanio rerio*	9
Clown barb	*Barbus everetti*	1
Tiger barb	*Puntius partipentazona*	8
White Cloud Mountain fish	*Tanichthys albonubes*	15

CYPRINODONTOIDEI

Family and common name	Scientific name	Number
Poeciliidae:		
Flag-tailed guppy	*Lebistes reticulatus*	10
Guppy	*Lebistes reticulatus*	15
Black mollie	*Mollienisia latipinna*	2
Platy, or moonfish	*Xiphophorus maculatus*	1

PERCOMORPHOIDEI

Family and common name	Scientific name	Number
Anabantoidea:		
Climbing perch	*Anabas testudineus*	3
Cichlidae:		
Peacock cichlid	*Astronotus ocellatus*	1
Egyptian mouthbreeder	*Haplochromis multicolor*	3
Angelfish	*Pterophyllum eimekei*	2
"Jack Dempsey" fish	*Cichlasoma biocellatum*	35
Jewelfish	*Hemichromis bimaculatus*	1

FINANCES

Funds for the operation of the National Zoological Park are appropriated annually under the District of Columbia Appropriation Act. The operation and maintenance appropriation for the fiscal year 1960 totaled $1,165,200, which was $211,400 more than for the fiscal year

1959. The increase consisted of $41,200 to cover wage-board salary increases; $19,100 for within-grade salary advancements for both classified and wage-board employees; $130,600 to establish 28 new positions; $9,000 increase for the purchase of animal food; $2,500 in miscellaneous supplies; and $9,000 for the purchase of new equipment.

Of the total appropriation, 82.3 percent ($958,631) was used for salaries and related personnel costs and 17.7 percent ($206,569) for the maintenance and operation of the Zoo. Included in the latter figure were $74,000 for animal food; $17,296 for fuel for heating; $32,598 for materials for building construction and repairs; $8,090 for the purchase of animals; $9,600 for electricity; $4,871 for telephone, postal, and telegraph services; and $5,000 for veterinarian equipment and supplies. The balance of $55,114 in operational funds was expended for other items, including freight, sundry supplies, uniforms, gasoline, road repairs, equipment replacement, and new equipment.

In addition to the regular appropriation $130,000 was appropriated for capital outlay: $44,000 to repair the roofs of the small mammal house, large mammal house, and reptile house; and $86,000 for safety improvements.

PERSONNEL

In fiscal year 1960 there were 186 authorized positions at the Zoo divided as follows: Administrative office, 16; animal department, 70, an increase of 12 over the previous year; mechanical department, 61, an increase of 11; police department, 30, an increase of 3; and grounds department, 9, an increase of 2.

Lt. J. R. Wolfe was appointed chairman of the safety committee, succeeding Dr. James F. Wright, who will continue as a member of the subcommittee. Lt. C. E. Brink replaced Lt. Wolfe as the police department member of the subcommittee.

Capt. William R. James recruited and organized a group of 15 Zoo employees to receive training at the Civil Defense Fire School. First-aid classes were organized with Pvt. C. S. Grubbs of the police department and L. Ratliff of the animal department as instructors.

Ernest Cook, supervisory animal keeper, retired on March 9, 1960, after serving the Zoo since December 1, 1930. During most of those years he worked in the bird house.

FRIENDS OF THE NATIONAL ZOO

"Friends of the National Zoo," a group of civic-minded District residents, were active again this year. On September 26 and 27 they carried out a two-day "Salute to the National Zoo," which drew 53,000 visitors. Embassies and State societies donated flags which were flown in front of many of the cages, indicating the country of origin of the animal on exhibit. Special labels set in laminated plastic were written for 16 exhibits. On the second day of the "Salute" a new flagpole was formally dedicated "in warm admiration for Dr. William M. Mann, former Director." Max Kampelman, president of the Friends of the National Zoo, made the presentation, which was accepted by Dr. Remington Kellogg, representing the Smithsonian Institution. Zoo Park Police Officers Trautman, Ellerbe, and Moore formed a mounted color guard as the new 49-star flag was raised to the top of the flagpole at the Connecticut Avenue entrance to the Zoo.

On December 14 at the Chancery of the Israeli Embassy in Washington the National Zoological Park received a set of 50 plaques designed as labels for zoo animals mentioned in the Old Testament. These are replicas of the labels used in the Biblical Zoo in Jerusalem and have, besides the name of the animal, the appropriate text quoted in both English and Hebrew. The plaques themselves are of laminated plastic in soft shades of blue, green, and bronze, with the lettering in white. They have been installed in the Zoo and will later be sent as a traveling exhibit to other interested zoos in the States, returning to Washington as a permanent exhibit. At the ceremony at the Chancery, the plaques were presented to the Director of the National Zoological Park by Machael Arnon, Counselor of the Embassy. Among those present were Dr. John L. Keddy, representing the Smithsonian Institution, John Perry, president of the Friends of the National Zoo, J. Lear Grimmer, Associate Director of the Zoo, and Dr. William M. Mann, former Director.

INFORMATION AND EDUCATION

The Zoo continues to handle a large correspondence with persons all over the world who write for information regarding animals. From every part of this country citizens write to the Zoo as a national institution. Telephone calls come in constantly, asking for identification of animals, proper diets, or treatment of disease. Visitors to the office as well as to the animal exhibits are constantly seeking information.

The Director spent seven weeks (August to October) in Europe, attending the meeting of the International Union of Directors of Zoological Gardens in Copenhagen, Denmark, and visiting zoological parks in Russia, Germany, Switzerland, Holland, Belgium, France, and the British Isles. Particular studies were made of new construction and methods of management. On his return he lectured before various civic and scientific groups and showed his pictures of the European zoos. He also gave one radio interview.

Dr. James F. Wright, veterinarian, went to Senegal, West Africa, at the request of the Forestry Department of that country to instruct its officers in the use of the "flying syringe." The Senegalese Government was interested in this method of immobilizing animals because of the necessity of relocating some of the herds of game, which they wished to do with as little loss of individual animals as possible. While in Senegal, Dr. Wright captured a defassa kob, which was sent to the Zoo in Brazzaville, Congo. As far as is known, this is the first example of a wild animal being captured by the projectile syringe for exhibition in a zoo.

Dr. Wright participated in a "Symposium on the Automatic Projectile Syringe" at the University of Georgia, Athens, Ga., in April 1960. He spoke on "The Projectile Delivery of Drugs in Zoo Work" and (with Dr. Warren R. Pistey of the University of Virginia) on "Immobilization of Captive Wild Animals with Succinylcholine."

Malcolm Davis, associate headkeeper, spoke to civic and church groups, and also to the Northern Virginia Ornithological Society. He continued to write a weekly nature column for the *Herndon-Chantilly Times* and to edit the publication "Capsules" for the Woodard Research Corporation in Herndon, Va.

Keepers Burgess, DePrato, Maliniak, and Widman brought Zoo animals to the television screen repeatedly. Many of these programs were broadcast on the "Time for Science" series from station WTTG, sponsored by the Greater Washington Educational Television Association, and watched by 50,000 students in the District of Columbia, Maryland, and Virginia. The same program also made a film in the Zoo of mammals, birds, and reptiles, which was shown over WTTG.

Ordinarily the Zoo does not conduct guided tours of the Park, but exceptions were made for groups of handicapped children—orthopedic cases, a small group of blind children from Hyattsville (Md.) Elementary School, and 30 deaf children from Gallaudet College. The largest of these groups consisted of 60 handicapped children who were brought to the Zoo by the Kiwanis Club. In all cases police and keepers escorted them.

The Department of Zoology, University of Maryland, brought a class of 12 students of vertebrate zoology to study the living animals. This course, which was under the direction of Dr. Howard Winn, included four visits to the Zoo, and studies were made of mammals, birds, and reptiles. Tape recordings of sounds of small mammals and of bird songs were made, to be played back later in the classroom.

The Virginia Herpetology Society met in the reptile house on November 14, 1959, and members were given a guided tour by Senior Keeper Mario DePrato. Mr. DePrato also spoke to a class of students from Taylor School who visited the reptile house.

A group of 1,620 foreign exchange students visited the Park on July 16, 1959; and 16,785 School Safety Patrol children, in 420 buses, came to the Zoo on May 14, 1960, from many parts of the United States.

While the Zoo does not conduct a regular research program as such, effort is made to study the animals and to improve their health, housing, and diet in every way possible.

REPORT OF THE VETERINARIAN

As reported in previous years (1958, 1959) the projectile type of syringe proved its usefulness in providing medication for captive animals. With this method it is not necessary to rope, manhandle, trap, or cage animals or exhaust either animals or keepers. As the operator seldom needs help in using it, a considerable saving in man-hours is also effected.

With the use of the projectile syringe and the immobilizing techniques, three interesting surgical operations were performed. One was the removal of a large goiter from a male spotted hyena anesthetized with a new barbiturate. A survey of the available records indicates that this type of thyroid enlargement has been found in the past in hyenas in the National Zoological Park. The animal had been treated medically for six months prior to surgery without noticeable improvement. A small fibroma was removed from the back of an Alaskan brown bear, using pentobarbital sodium intravenously as an anesthetic and succinylcholine chloride intramuscularly as a pre-anesthetic. The pre-anesthetic facilitated a smooth and quick induction of the intravenous barbiturate. A broken tooth was removed from one of the female Malay sun bears with succinylcholine chloride and a local anesthetic. With the newer techniques, this operation was completed in a few minutes instead of the more usual several hours.

A preliminary report on the use of succinylcholine chloride was published in *Veterinary Medicine* (vol. 54, p. 446, Sept. 1959), and a more complete paper was presented by Dr. Warren R. Pistey at a symposium on the automatic projectile syringe at the University of Georgia in April 1960.

To the animals listed in last year's report as successfully immobilized with this drug, the following can be added: Alaskan brown bear, spectacled bear, Peninsula bear, hybrid bear, Formosan macaque, rhesus monkey, European brown bear, sloth bear, and Malayan sun bear.

Work with alkaloidal nicotine as an immobilizing agent was continued on native white-tailed deer in cooperation with Dr. Vagn Flyger of the State of Maryland Department of Research and Education.

Capchurbarb was used for the first time on captive wild animals this past spring with excellent results. Depending on the dosage, this drug may be used for immobilization, sedation, or for anesthesia by the intramuscular route. The following species were successfully immobilized with this drug: peccary, tahr goat, white fallow deer, Formosan macaque, spotted hyena, and Nubian ibex. Results so far indicate that this drug will have a far greater application than any of the others for immobilization.

During April 1960, Maj. Patrick Bromfield, game control officer of the Bechuanaland Protectorate, spent some time in the National Zoological Park studying the use of the automatic projectile syringe and methods of immobilization, in order to translocate game in the Protectorate. He also conferred with game officials in Maryland, Georgia, Tennessee, and the National Park Service.

Tuberculosis remains the most important health problem in our hoofed animals. In the recent past, animals that have not reacted to the intradermic tuberculin test were found infected with tuberculosis at necropsy. This loss of sensitivity to tuberculin is apparently not uncommon in the later stages of the disease. Arrangements were made with the U.S. Department of Agriculture to determine the presence of serum antibodies for tuberculosis in suspect animals. Accordingly, two elands and a giraffe, all suspect but not reacting to the intradermic test, were immobilized with succinylcholine and blood samples were obtained for serology.

A hybrid Philippine and Javan macaque with severe central nervous system symptoms showed, upon pathological examination, to have had cerebral and pulmonary forms of cryptococcosis. Seven other monkeys of various species were sent to the Armed Forces Institute of Pathology since last year, all of which, during life, had shown signs of acute amaurotic epilepsy as described by Langdon and Cadwallader in 1915 and Van Bogaert and Scherer in 1935. Some of these monkeys were sent for euthanasia in the last stages of the disease. Keepers in the monkey house state that this condition has occurred there for years without an apparent change in morbidity or severity. The pathologists' report is not completed at this time, but it is felt that the disease is not contagious, if indeed infectious.

Dr. F. R. Lucas, Livestock Sanitary Laboratory, Centreville, Md., provided the following laboratory services: bacterial cultures and identification, urinalysis, dark field examinations for Leptospira, and microscopic tissue reports.

Hearts and large vessels of necropsy specimens not needed by the Armed Forces Institute of Pathology were delivered to Dr. Thomas Peery of the George Washington University School of Medicine for his study of comparative pathology.

Parasitological identifications were conducted by Mrs. Mabelle Chitwood and Allen McIntosh of the U.S. Department of Agriculture's Animal Disease and Parasite Research Division. A. P. Cannon of the University of Kansas, currently at the University of Maryland, made blood smears from 55 snakes revealing 12 individuals of 8 species harboring hemogregarine blood parasites. The subject of these blood parasites in snakes would support a full-time research project for investigation.

A cooperative investigation was originated with Dr. William L. Straus, W. J. Young, and T. Merz, of Johns Hopkins University to study chromosomes in primates by obtaining blood samples from the available subjects. Mr. Young is also interested in studying the genetic structure of the hybrid bears, F^1 and F^2, by working with blood samples which can now be easily obtained by immobilizing the animals.

Several alligators, both small and medium sized, were provided to Dr. A. G. Morrow and Dr. L. J. Greenfield of the National Heart Institute, for anatomical and physiological studies on the cardiac system, since these reptiles have normal hearts which are similar in construction to the hearts of children with congenital heart defects.

Two Indian pythons and two American alligators were taken to the Department of Biophysics at Walter Reed Army Medical Center to assist Maj. K. T. Woodward in determining the muscle mass of various animals by the use of a scintillating counter which measures muscle potassium.

Following are the statistics for the mortality rates during the past fiscal year and a table of comparison with the past six fiscal years:

Mortality, fiscal year 1960

	Death	Attrition*
Mammals	114	39
Birds	140	35
Reptiles	112	92
	366	166

Total mortality, past 6 fiscal years

1955	735
1956	618
1957	549
1958	550
1959	472
1960	532

*Attrition is the term used for those losses due mainly to the trauma of shipment and handling after accession at the Zoo, or before an animal can adapt to cage habitation within the collection.

Animals that had been in the collection for a relatively long time and died this year were: A Swinhoe's pheasant (*Gennaeus swinhoii*) received August 11, 1931, died August 10, 1959, after 28 years; an Indian crow (*Corvus insolens*), received September 28, 1937, from the National Geographic Society–Smithsonian Institution Expedition to the Netherlands East Indies, died November 4, 1959, after 22 years

1 month 7 days; a short-tailed shrew (*Blarina brevicauda*), which usually does not live in captivity, was exhibited from December 27, 1957, to March 28, 1960, a total of 2 years 3 months 1 day; and a marabou stork (*Leptopilus crumeniferus*), received from the Victor J. Evans estate on February 20, 1931, died May 19, 1960, after 29 years 3 months.

COOPERATION

At all times special efforts are made to maintain friendly contacts with other Federal and State agencies, private concerns and individuals, and scientific workers for mutual assistance. As a result, the Zoo receives much help and advice and many valuable animals, and in turn it furnishes information and, whenever possible, animals it does not need.

Special acknowledgment is due George Kirk and John Pulaski, in the office of the U.S. Dispatch Agent in New York City, and Stephen E. Lato, dispatch agent in San Francisco, who are frequently called upon to clear shipments of animals coming from abroad, often at great personal inconvenience. The animals have been forwarded to Washington without the loss of a single individual.

When it is necessary to quarantine animals coming into this country, they are taken to the U.S. Department of Agriculture's station in Clifton, N.J. During the past year Dr. B. C. Swindell and Andy Goodel, two of the officials stationed there, have been most cooperative in keeping the National Zoological Park informed as to the well-being of animals and birds held there for quarantine.

Animals that die in the Zoo are offered to the United States National Museum. If the Museum does not need them, they may be sent to research workers in other institutions. During the past year the Museum accepted 41 mammals, which are to be preserved as scientific specimens.

The Zoo cooperated with the National Capital Parks and lent small animals to Park naturalists and to the Nature Center in Rock Creek Park for demonstration. A collection of reptiles was loaned to Walter Reed Army Medical Center in order to have a film made of poisonous snakes. Senior Keeper W. Widman trapped a number of sea gulls for a research project at the National Institutes of Health.

Gifts of plants were received from Mount Vernon, the Botanical Gardens, St. Elizabeths Hospital, the Naval Observatory, and the Soldiers' Home.

VISITORS

Attendance at the Zoo this year reached a total of 4,059,804. In general, this figure is based on estimates rather than actual counts.

Estimated number of visitors for fiscal year 1960

July (1959)	516, 829	January (1960)	127, 900
August	446, 000	February	86, 150
September	364, 500	March	216, 425
October	302, 300	April	515, 400
November	180, 400	May	632, 200
December	93, 600	June	578, 100
		Total	4, 059, 804

Number of bus groups

Locality	Number of groups	Number in groups	Locality	Number of groups	Number in groups
Alabama	16	546	Nebraska	1	40
Connecticut	23	950	New Hampshire	4	130
District of Columbia	131	5, 714	New Jersey	23	1, 166
Delaware	7	320	New York	154	6, 054
Florida	28	2, 911	North Carolina	204	8, 943
Georgia	31	6, 623	Ohio	35	2, 031
Illinois	3	130	Oklahoma	1	60
Indiana	5	224	Pennsylvania	211	13, 177
Iowa	1	48	South Carolina	51	2, 164
Kentucky	14	578	South Dakota	1	31
Massachusetts	6	318	Tennessee	70	3, 040
Maine	1	33	Texas	1	60
Maryland	554	2, 222	West Virginia	35	1, 667
Michigan	5	174	Wisconsin	3	228
Minnesota	9	357	Virginia	413	29, 436
Mississippi	4	116			
			Total	2, 045	89, 491

Groups from foreign countries

	Number of groups	Number in groups		Number of groups	Number in groups
Asia	2	110	Korea	2	105
Ecuador	1	7	Norway	5	161
Foreign officers	2	91	Sweden	1	28
International exchange students	1	1, 620	Thailand	1	35
Japan	1	15	Total	16	2, 172

About 2 p.m. each day the cars then parked in the Zoo are counted and listed according to the State, Territory, or country from which they come. This is, of course, not a census of the cars coming to the Zoo but is valuable in showing the percentage of attendance by States of people in private automobiles. Many District of Columbia, Maryland, and Virginia cars come to the Zoo to bring guests from other States. The tabulation for the fiscal year 1960 is as follows:

	Percentage		*Percentage*
Maryland	32.3	California	0.7
Virginia	23.0	Connecticut	.7
District of Columbia	20.5	Michigan	.7
Pennsylvania	3.5	South Carolina	.6
New York	2.5	Illinois	.6
North Carolina	2.0	Tennessee	.6
New Jersey	1.6	Texas	.4
Ohio	1.5	Georgia	.4
West Virginia	1.1	Indiana	.4
Florida	1.1		
Massachusetts	.9	Total	95.1

The remaining 4.9 percent came from other States, Arabia, Azores, British Columbia, Canal Zone, Cuba, England, France, Guatemala, Germany, Japan, Manitoba, Mexico, Morocco, New Brunswick, Newfoundland, Nova Scotia, Okinawa, Panama, Puerto Rico, Virgin Islands, and Yugoslavia.

On the days of even small attendance there are cars parked in the Zoo from at least 15 States, Territories, the District of Columbia, and foreign countries. On average days there are cars from about 22 States, Territories, the District of Columbia, and foreign countries; and during the periods of greatest attendance the cars represent not less than 34 different States, Territories, and countries.

Parking spaces in the Zoo now accommodate 1,079 cars when the bus parking place is utilized and 969 cars when it is not used.

At the request of the Board of Regents of the Smithsonian Institution and the Commissioners of the District of Columbia, a survey was made during the year to determine the residence of the visitors by percentage. The work was done by the Zoo police under the guidance of Albert Mindlin and Samuel Rosenthal, analytical statisticians of the Management Office of the District of Columbia.

Three categories of residence were listed: District of Columbia, suburbs (the surrounding four counties), and the rest of the country. Mr. Mindlin set up a method of sampling that was scientifically designed and conducted to produce statistically valid and reliable results. To accomplish this a random sampling of all visitors in the Zoo was to be taken from one spot in the Zoo. Following pre-test surveys made in several spots scattered throughout the Zoo at various times of the day, the spot finally selected was at the water fountain between the bears and the hardy cats. To insure that the police officers doing the interviewing were completely unable to affect, either intentionally or unintentionally, the random sampling of the visitors, a chalk line was drawn on the sidewalk and the interviewer given a mechanical hand counter. It was specified that he should interview every tenth person coming down the hill, with the exception of babes in arms. During those portions of the year when visitor attendance was very light, every fifth person was interviewed.

To insure random sampling, one Sunday was selected at random from all the Sundays of the month, one Saturday at random from the Saturdays, and two weekdays at random from the available weekdays. The day selected was divided into four 2-hour periods; in each period 1 hour was selected at random. The police officer to make the interviews was randomly selected from those available on the day of the sampling. The police officer asked each interviewee a single question: "Where do you live?"

The information gathered from the visitor survey was then reduced to mathematical formulae by the research statistician of the District of Columbia, and the following cumulative percentages were arrived at: District of Columbia residents, 18.8; nonresidents, 81.2 (suburban, 30; other, 51.2).

POLICE DEPARTMENT

Activities in the police department showed a marked increase in keeping with the larger visitor attendance. A new cruiser was placed in service and traveled a distance of 24,000 miles in the year. This made possible more rigid traffic-law enforcement and resulted in an increase in the number of arrests for traffic violations.

Sgt. D. B. Bell and Sgt. E. A. King attended and graduated from the Metropolitan Police Academy in March.

Lt. C. E. Brink, Sgt. E. A. King, Pvts. M. J. Devlin, H. J. Moore, and D. E. Trautman attended the monthly sessions of the Law Enforcement Institute at the University of Maryland and received certificates in June.

Sgt. A. L. Canter and Pvt. G. H. Adams attended a special course in the driver training program held by the Bureau of Departmental Operations, U.S. Civil Service Commission.

The mounted color guard consisting of five men, with Sgt. D. B. Bell in charge, participated in several parades.

The old switchboard at police headquarters was taken out of service at the administration building, and a new modern telephone system was put in operation early in November.

A new target range was completed, giving all members of the department the opportunity to practice and qualify for better marksmanship. Work on it was done by volunteer members of the force.

The total number of visitors stopping in the police station for information of various sorts was 13,262. First aid was given (principally for minor accidents such as bee stings or scraped knees) to 1,107 persons. Fifteen pairs of unclaimed eyeglasses and sunglasses were sent to the Society for the Prevention of Blindness, and six bags of unclaimed clothing and miscellaneous articles were turned over to the Goodwill Industries.

BUILDINGS AND GROUNDS

No funds were appropriated for new construction, and the regular maintenance work of patching and painting old buildings was carried on throughout the year. A number of minor improvements, however, were carried out.

A 5-ton air conditioner was installed in the feed barn for the Alaskan reindeer, and an overhead sprinkler was built in a corner of their outside yard. This shower bath runs continuously, and the reindeer obviously enjoy it, as one or more animals can usually be seen standing under it. While a fine spray of water cools their backs, they stretch their necks, tilt their heads up, and with open mouths snap at the drops of water.

A complete rewiring of the reptile house was completed, and rewiring and a new system of lighting were installed in the monkey house. Pilot models of radiant heat were put in the floors of three shelters for hoofed stock.

A shelter, constructed in 1893 for a small herd of llamas and used in recent years for elk, was remodeled into a stable for the three police horses.

The murals in the Zoo Park Restaurant were given a thorough cleaning under the supervision of the artist Domenico Mortellito, of Wilmington, Del. The murals, designed by Mr. Mortellito in 1940 on carved, lacquered battleship linoleum, depict Noah's Ark above the fireplace and animals marching two by two around all four walls. They had darkened through the years, but may now be seen in their original glowing colors.

The work of the gardener's force consisted mainly of removing dead trees, which are a menace to both animals and visitors, and replacing them with young trees. In all, 226 trees were cut down, and 153 were limbed and topped. Stands of grass in several enclosures were thriving before the animals were moved in, and efforts are now being made to maintain the grass. Work continued on the new service road, with grading, ditching, and general maintenance, and the bank has been terraced with logs, brush reforesting, and grass seeding. Vines, weeds, and trees on or around two-thirds of the Zoo boundary were cut and trimmed. A nursery consisting of nearly 5,000 young trees, mostly evergreens, was cared for by the gardener's force. Three men attended the Fire School at General Services Administration, three attended horticultural classes at the National Bureau of Standards, and four took the first-aid course.

PLANS FOR THE FUTURE

A new office to replace the 155-year-old "mansion" is imperative. The present administration building, while a historic landmark, is not suited to the purpose for which it is being used, nor is it safe, being honeycombed with termites and rotted from dampness. A modern building, with properly arranged offices, library stacks and shelves, a conference room, and a small laboratory, is badly needed.

The facilities at the National Zoological Park are based on antiquated installations and should be modernized, starting with such basic necessities as water, electricity, sewage, and heating. It is hoped that a master plan can be drawn for the Zoo so that all future construction and work may be coordinated.

Respectfully submitted.

Theodore H. Reed, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on the Canal Zone Biological Area

SIR: It gives me pleasure to present herewith the annual report on the Canal Zone Biological Area for the fiscal year ended June 30, 1960.

SCIENTISTS, STUDENTS, AND OBSERVERS

Following is the list of 39 scientists, students, and observers who visited Barro Colorado Island last year, and stayed for several days, in order to conduct scientific research or observe the wildlife of the area. Twenty-seven other scientific visitors each spent a day and a night on the island. In addition, scientists of other research and technical organizations in the Canal Zone and the Republic of Panama made use of station facilities.

Name	*Principal interest*
Bennett, Mr. and Mrs. Charles, Jr., University of California, Los Angeles.	Temperature and humidity, gradients in forest.
Blaufuss, Arnold, Chicago, Ill.	Wildlife observation.
Boyajian, Edward, Pennsylvania State University, University Park, Pa.	Birds.
Brattstron, Dr. B., Adelphi University, Garden City, N.Y.	Reptiles and amphibians.
Brown, Dr. W. L., Jr., Harvard University, Cambridge, Mass.	Ants.
Carpenter, Dr. C. R., Pennsylvania State University, University Park, Pa.	Howler monkeys.
Carpenter, Lane, Pennsylvania State University, University Park, Pa.	Assistant to Dr. Carpenter.
Cox, George, University of Illinois, Urbana, Ill.	Tropical bird physiology.
Cumming, R. B., University of Florida, Gainesville, Fla.	Insects.
Eastman, Whitney, Minneapolis, Minn.	Birds.
Edens, Mrs. LaPrelle, Minneapolis, Minn.	Birds.
Edwards, Dr. E. P., Amherst, Va.	Birds.
Eisenmann, Dr. Eugene, New York City.	Birds.

Name	*Principal interest*
Elms, Alan, Pennsylvania State University, University Park, Pa.	Assistant to Dr. Carpenter.
Gasteiger, Dr. E. L., University of Rochester, Rochester, N.Y.	Comparative physiology.
Gersh, Dr. Isidore, University of Chicago, Chicago, Ill.	Wildlife observation.
Griffin, Dr. D. R., Harvard University, Cambridge, Mass.	Bats.
Groner, Mrs. Dorothy E., Los Angeles, Calif.	Birds.
Kendeigh, Dr. and Mrs. S. Charles, University of Illinois, Urbana, Ill.	Tropical bird physiology.
Kerr, Col. David, Arlington, Va.	Wildlife observation.
Kuehn, Robert, University of California, Berkeley.	Howler monkeys.
Linford, Dr. J. B., Oakland, Calif.	Wildlife observation.
Mason, Dr. W. A., Pennsylvania State University, University Park, Pa.	Howler monkeys.
McCluskey, Dr. Elwood, Harvard University, Cambridge, Mass.	Ants.
McCue, Dr. J. H. G., Massachusetts Institute of Technology, Cambridge, Mass.	Bats.
McKittrick, T.H., Blairstown, N.J.	Birds.
Metzuda, Dr. Japan.	Entomology.
Peterman, Dan, Pennsylvania State University, University Park, Pa.	Assistant to Dr. Carpenter.
Petkins, Mrs. S., Gorgas Memorial Laboratory, Panama.	Fruit flies.
Ryan, Richard, New Shrewsbury, N.J.	Birds.
Smith, John, Harvard University, Cambridge, Mass.	Flycatchers.
Southwick, Dr. C. R., Pennsylvania State University, University Park, Pa.	Howler monkeys.
Stuart, Alaistair, Harvard University, Cambridge, Mass.	Termite behavior.
Warren, James, University of California, Los Angeles.	Reptiles and amphibians.
Wessenberg, Dr. Harry, San Francisco State College, San Francisco, Calif.	Tropical diseases and study on the opulinid protozoa of anurans.

Name	*Principal interest*
Worley, Dr. L. G., Brooklyn College, New York.	Wildlife observation.
Zimmerman, John, University of Illinois, Urbana, Ill.	Tropical bird physiology.

VISITORS

Approximately 209 vistors were permitted to visit the island for a day.

RAINFALL

During the dry season (January through April) of the calendar year 1959, rains of 0.01 inch or more fell during 19 days (34 hours) and amounted to 1.91 inches, as compared to 19.31 inches during 1958. During the wet season of 1959 (May through December), rains of 0.01 inch or more fell on 182 days (691 hours) and amounted to 92.97 inches, as compared to 80.89 inches during 1958. Total rainfall for the year was 94.88 inches. During 35 years of record, the wettest year was 1935 with 143.42 inches, and the driest year was 1930 with only 76.57 inches. March was the driest month of 1959 (0.11 inch) and December the wettest (24.41 inches). The maximum records for short periods were: 5 minutes: 1.30 inches; 10 minutes: 1.65 inches; 1 hour: 4.11 inches; 2 hours: 6.33 inches; 24 hours: 10.87 inches.

TABLE 1.—*Annual rainfall, Barro Colorado Island, C.Z.*

Year	Total inches	Station average	Year	Total inches	Station average
1925	104. 37	--------	1943	120. 29	109. 20
1926	118. 22	113. 56	1944	111. 96	109. 30
1927	116. 36	114. 68	1945	120. 42	109. 84
1928	101. 52	111. 35	1946	87. 38	108. 81
1929	87. 84	106. 56	1947	77. 92	107. 49
1930	76. 57	101. 51	1948	83. 16	106. 43
1931	123. 30	104. 69	1949	114. 86	106. 76
1932	113. 52	105. 76	1950	114. 51	107. 07
1933	101. 73	105. 32	1951	112. 72	107. 28
1934	122. 42	107. 04	1952	97. 68	106. 94
1935	143. 42	110. 35	1953	104. 97	106. 87
1936	93. 88	108. 98	1954	105. 68	106. 82
1937	124. 13	110. 12	1955	114. 42	107. 09
1938	117. 09	110. 62	1956	114. 05	107. 30
1939	115. 47	110. 94	1957	97. 97	106. 98
1940	86. 51	109. 43	1958	100. 20	106. 70
1941	91. 82	108. 41	1959	94. 88	106. 48
1942	111. 10	108. 55			

TABLE 2.—*Comparison of 1958 and 1959 rainfall, Barro Colorado Island (inches)*

Month	Total		Station average	Years of record	1959 excess or deficiency	Accumulated excess or deficiency
	1958	1959				
January	4. 26	0. 32	2. 15	34	−1. 83	--------
February	7. 34	. 15	1. 38	34	−1. 23	−3. 06
March	2. 98	. 11	1. 18	34	−1. 07	−4. 13
April	4. 73	1. 33	2. 97	35	−1. 64	−5. 77
May	12. 22	8. 89	10. 85	35	−1. 96	−7. 73
June	8. 89	8. 29	10. 82	35	−2. 53	−10. 26
July	9. 54	8. 86	11. 63	35	−2. 77	−13. 03
August	12. 35	8. 62	12. 36	35	−3. 74	−16. 77
September	10. 64	14. 69	10. 19	35	+4. 50	−12. 27
October	15. 42	9. 03	13. 90	35	−4. 87	−17. 14
November	7. 16	10. 18	18. 21	35	−8. 03	−25. 17
December	4. 67	24. 41	10. 84	35	+13. 57	−11. 60
Year	100. 20	94. 88	106. 48	--------	--------	−11. 60
Dry season	19. 31	1. 91	7. 68	--------	--------	−5. 77
Wet season	80. 89	92. 97	98. 80	--------	--------	−5. 83

BUILDING, EQUIPMENT, AND IMPROVEMENTS

The most unusual event on Barro Colorado Island during the past year was a series of landslides on December 7, 1959, after five days of nearly continuous rain.

Before the landslides occurred, improvement and expansion of the station facilities were proceeding according to plan: the remodeling of Chapman House had been completed; new cages and aviaries had been constructed; and plans had been drawn for remodeling the laboratory space in the new laboratory building and the living facilities in the old laboratory building. Although this progress was interrupted by the landslides, fortunately no one was injured and little equipment was destroyed; one major slide and two minor ones occurred in the station area itself and numerous others occurred in other parts of the island but the only items damaged beyond repair were two large hygrothermographs and one hygrograph, and one large aviary and pond for water birds.

The slides did, however, alter the topography of the station area, necessitating the following program of repair and reconstruction:

Demolition and re-erection of Barbour House and of one house used as quarters for the laborers.

Dredging of the channels leading to the station boat dock.

Relocation of several poles supporting electrical cables.

Soil-conservation planting of trees and shrubs in the station area and the addition of several new drainage ditches.

In addition to repairing the damages from the landslides, both of the generators and the launch *Snook* were partially overhauled and the usual maintenance tasks were continued.

OTHER ACTIVITIES

The Resident Naturalist continued his research, assisted by David Fairchild II and James Ambrose, on the behavior of several groups of tropical birds and monkeys. The National Science Foundation awarded a grant to the Resident Naturalist for a study of the behavior of tropical procyonid and mustelid carnivores.

The program of internships for graduate students was continued. John H. Kaufmann, of the University of California at Los Angeles, completed research on various aspects of the behavior and ecology of the coatimundi and secured data on some other mammals on both Barro Colorado Island and the mainland. John Ebinger, of Yale University, began to collect botanical specimens and reorganize the station herbarium, which has long been in poor condition, and this reorganization will be an extremely valuable addition to the station facilities.

Collection of data for Dr. Charles F. Bennett's study of temperature and humidity gradients in the forest on Barro Colorado Island was completed in December of 1959.

The expansion of the library continued. Work on bringing the catalog up to date, processing new acquisitions, and preparing books for binding is now being undertaken.

ACKNOWLEDGMENTS

The Canal Zone Biological Area can operate only with the excellent cooperation of the Canal Zone Government and the Panama Canal Company. Thanks are due especially to the Executive Secretary, Paul Runnestrand, and his staff, the Customs and Immigration officials, and the Police Division. The technical advice and assistance provided by P. Alton White, Chief of the Dredging Division, and members of his staff, by C. C. Soper of the Eastman Kodak Co., and by Lt. Boynton and other members of the Signal Corps Meteorological Team No. 2, were also invaluable.

Respectfully submitted.

Martin H. Moynihan,
Resident Naturalist.

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on the International Exchange Service

Sir: I have the honor to submit the following report on the activities of the International Exchange Service for the fiscal year ended June 30, 1960:

The Smithsonian Institution is the official United States agency for the exchange with other nations of governmental, scientific, and literary publications. The International Exchange Service, initiated more than a century ago by the Smithsonian Institution for the interchange of scientific publications between learned societies and individuals in the United States and those of foreign countries, serves as a means of developing and executing in part the broad and comprehensive objective, "the diffusion of knowledge." It was later designated by the United States Government as the agency for the transmission of official documents to selected depositories throughout the world, and it continues to execute the exchanges pursuant to conventions, treaties, and other international agreements.

The number of packages of publications received for transmission during the year was 1,141,998, an increase of 12,522 packages over the previous fiscal year. The weight of the packages received was 877,636 pounds, an increase of 110,247 pounds. The average weight of the individual package was 12.29 ounces as compared to the 10.87-ounce average for the fiscal year 1959.

Publications were received from approximately 250 domestic sources including United States Government bureaus and departments, congressional committees and members of Congress, universities, agricultural experiment stations, learned societies, organizations, and individuals for transmission to foreign addressees in more than 150 foreign countries. Publications were received from 59 foreign countries for distribution to addressees in the United States.

The publications received from foreign sources for addressees in the United States and from domestic sources for shipment abroad are classified as shown in the following table:

Classification	Packages		Weight	
	Number	*Number*	*Pounds*	*Pounds*
United States parliamentary documents received for transmission abroad	672, 565		327, 142	
Publications received in return for parliamentary documents		6, 482		9, 483
United States departmental documents received for transmission abroad	226, 511		239, 316	
Publications received in return for departmental documents		4, 531		11, 167
Miscellaneous scientific and literary publications received for transmission abroad	178, 345		202, 324	
Miscellaneous scientific and literary publications received from abroad for distribution in the United States		53, 564		88, 204
Total	1, 077, 421	64, 577	768, 782	108, 854
Grand total	1, 141, 998		877, 636	

The packages of publications are forwarded to the exchange bureaus of foreign countries by freight or, where shipment by such means is impractical, to the foreign addressees by direct mail. Distribution in the United States of the publications received through the foreign exchange bureaus is accomplished primarily by mail, but by other means when more economical. The number of cases shipped to the foreign exchange bureaus was 3,449, or 609 more than for the previous year. Of these cases 993 were for depositories of full sets of United States Government documents, these publications being furnished in exchange for the official publications of foreign governments which are received for deposit in the Library of Congress.

The total weight of the packages transmitted during the year amounted to 870,784 pounds, which was 86,213 pounds more than was transmitted in the previous fiscal year. There was allocated to the International Exchange Service for ocean and domestic freight $35,052.54. With this amount it was possible to effect the shipment of 575,163 pounds. The weight of packages forwarded by mail and by means other than freight was 295,621 pounds. Approximately 8,427 pounds of the full sets of United States Government documents accumulated during the year because the Library of Congress had requested suspension of shipment to certain foreign depositories.

During the year, there was an increase of 10 percent in ocean freight rates. The transportation cost for hauling books and periodicals to the Baltimore piers remained at the 1959 level.

Shipments are made to Taiwan. No shipments are made to the mainland of China, North Korea, and Communist-controlled areas of Viet-Nam.

FOREIGN DEPOSITORIES OF GOVERNMENTAL DOCUMENTS

The number of sets of U.S. official publications received by the Exchange Service for transmission abroad in return for the official publications sent by foreign governments for deposit in the Library of Congress is now 106 (62 full and 44 partial sets), listed below. Changes that occurred during the year are shown in the footnotes.

DEPOSITORIES OF FULL SETS

ARGENTINA: División Biblioteca, Ministerio de Relaciones Exteriores y Culto, Buenos Aires.
AUSTRALIA: Commonwealth National Library, Canberra.
  NEW SOUTH WALES: Public Library of New South Wales, Sydney.
  QUEENSLAND: Parliamentary Library, Brisbane.
  SOUTH AUSTRALIA: Public Library of South Australia, Adelaide.
  TASMANIA: Parliamentary Library, Hobart.
  VICTORIA: Public Library of Victoria, Melbourne.
  WESTERN AUSTRALIA: State Library, Perth.
AUSTRIA: Administrative Library, Federal Chancellery, Vienna.
BRAZIL: Biblioteca Nacional, Rio de Janeiro.
BULGARIA: Bulgarian Bibliographical Institute, Sofia.[1]
BURMA: Government Book Depot, Rangoon.
CANADA: Library of Parliament, Ottawa.
  MANITOBA: Provincial Library, Winnipeg.
  ONTARIO: Legislative Library, Toronto.
  QUEBEC: Library of the Legislature of the Province of Quebec.
CEYLON: Department of Information, Government of Ceylon, Colombo.
CHILE: Biblioteca Nacional, Santiago.
CHINA: National Central Library, Taipei, Taiwan.
  National Chengchi University, Taipei, Taiwan.
COLOMBIA: Biblioteca Nacional, Bogotá.
COSTA RICA: Biblioteca Nacional, San José.
CUBA: Ministerio de Estado, Canje Internacional, Habana.
CZECHOSLOVAKIA: University Library, Prague.
DENMARK: Institut Danois des Échanges Internationaux, Copenhagen.
EGYPT: Bureau des Publications, Ministère des Finances, Cairo.
FINLAND: Parliamentary Library, Helsinki.
FRANCE: Bibliothèque Nationale, Paris.
GERMANY: Deutsche Staatsbibliothek, Berlin.
  Free University of Berlin, Berlin-Dahlem.
  Parliamentary Library, Bonn.
GREAT BRITAIN:
  ENGLAND: British Museum, London.
  LONDON: London School of Economics and Political Science. (Depository of the London County Council.)
HUNGARY: Library of Parliament, Budapest.[1]

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[1] Shipment suspended.

INDIA: National Library, Calcutta.
    Central Secretariat Library, New Delhi.
    Parliament Library, New Delhi.
INDONESIA: Ministry for Foreign Affairs, Djakarta.
IRELAND: National Library of Ireland, Dublin.
ISRAEL: State Archives and Library, Hakirya, Jerusalem.
ITALY: Ministero della Pubblica Istruzione, Rome.
JAPAN: National Diet Library, Tokyo.[2]
MEXICO: Secretaría de Relaciones Exteriores, Departmento de Información para el Extranjero México, D.F.
NETHERLANDS: Royal Library, The Hague.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Utenriksdepartmentets Bibliothek, Oslo.
PERU: Sección de Propaganda y Publicaciones, Ministerio de Relaciones Exteriores, Lima.
PHILIPPINES: Bureau of Public Libraries, Department of Education, Manila.
POLAND: Bibliothèque Nationale, Warsaw.[1]
PORTUGAL: Biblioteca Nacional, Lisbon.
SPAIN: Biblioteca Nacional, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Bibliothèque Centrale Fédérale, Berne.
TURKEY: National Library, Ankara.
UNION OF SOUTH AFRICA: State Library, Pretoria, Transvaal.
UNION OF SOVIET SOCIALIST REPUBLICS: All-Union Lenin Library, Moscow.
UNITED NATIONS: Library of the United Nations, Geneva, Switzerland.
URUGUAY: Oficina de Canje Internacional de Publicaciones, Montevideo.
VENEZUELA: Biblioteca Nacional, Caracas.
YUGOSLAVIA: Bibliografski Institut, Belgrade.[2]

DEPOSITORIES OF PARTIAL SETS

AFGHANISTAN: Library of the Afghan Academy, Kabul.
BELGIUM: Bibliothèque Royale, Bruxelles.[3]
BOLIVIA: Biblioteca del Ministerio de Relaciones Exteriores y Culto, La Paz.
BRAZIL: MINAS GERIAS: Departmento Estadul de Estatistica, Belo Horizonte.
BRITISH GUIANA: Government Secretary's Office, Georgetown, Demerara.
CANADA:
    ALBERTA: Provincial Library, Edmonton.
    BRITISH COLUMBIA: Provincial Library, Victoria.
    NEW BRUNSWICK: Legislative Library, Fredericton.
    NEWFOUNDLAND: Department of Provincial Affairs, St. John's.
    NOVA SCOTIA: Provincial Secretary of Nova Scotia, Halifax.
    SASKATCHEWAN: Legislative Library, Regina.
DOMINICAN REPUBLIC: Biblioteca de la Universidad de Santo Domingo, Ciudad Trujillo.
ECUADOR: Biblioteca Nacional, Quito.
EL SALVADOR:
    Biblioteca Nacional, San Salvador.
    Ministerio de Relaciones Exteriores, San Salvador.
GREECE: National Library, Athens.
GUATEMALA: Biblioteca Nacional, Guatemala.

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[2] Receives two sets.
[3] Changed from a full to a partial set.

HAITI: Bibliothèque Nationale, Port-au-Prince.

HONDURAS:
- Biblioteca Nacional, Tegucigalpa.
- Ministerio de Relaciones Exteriores, Tegucigalpa.

ICELAND: National Library, Reykjavik.

INDIA:
- BOMBAY: Secretary to the Government, Bombay.
- BIHAR: Revenue Department, Patna.
- KERALA: Kerala Legislature Secretariat, Trivandrum.[4]
- UTTAR PRADESH:
  - University of Allahabad, Allahabad.
  - Secretariat Library, Lucknow.
- WEST BENGAL: Library, West Bengal Legislative Secretariat, Assembly House, Calcutta.

IRAN: Imperial Ministry of Education, Tehran.

IRAQ: Public Library, Baghdad.

JAMAICA:
- Colonial Secretary, Kingston.
- University College of the West Indies, St. Andrew.

LEBANON: American University of Beirut, Beirut.

LIBERIA: Department of State, Monrovia.

MALAYA: Federal Secretariat, Federation of Malaya, Kuala Lumpur.

MALTA: Minister for the Treasury, Valletta.

NICARAGUA: Ministerio de Relaciones Exteriores, Managua.

PAKISTAN: Central Secretariat Library, Karachi.

PANAMA: Ministerio de Relaciones Exteriores, Panamá.

PARAGUAY: Ministerio de Relaciones Exteriores, Sección Biblioteca, Asunción.

PHILIPPINES: House of Representatives, Manila.

SCOTLAND: National Library of Scotland, Edinburgh.

SIAM: National Library, Bangkok.

SINGAPORE: Chief Secretary, Government Offices, Singapore.

SUDAN: Gordon Memorial College, Khartoum.

INTERPARLIAMENTARY EXCHANGE OF THE OFFICIAL JOURNAL

There are now being sent abroad 87 copies of the Federal Register and 97 copies of the Congressional Record. This is an increase over the preceding year of two copies of the Federal Register and of two copies of the Congressional Record. The countries to which these journals are being forwarded are given in the following list:

DEPOSITORIES OF CONGRESSIONAL RECORD AND FEDERAL REGISTER

ARGENTINA:
- Biblioteca de la H. Legislatura de Mendoza, Mendoza.[5]
- Biblioteca del Poder Judicial, Mendoza.[6]
- Boletin Oficial de la República Argentina, Ministerio de Justica e Instrucción Pública, Buenos Aires.
- Cámara de Diputados Oficina de Información Parlamentaria, Buenos Aires.

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[4] Added during the year.

[5] Congressional Record only.

[6] Federal Register only.

AUSTRALIA:
  Commonwealth National Library, Canberra.
  NEW SOUTH WALES: Library of Parliament of New South Wales, Sydney.
  QUEENSLAND: Chief Secretary's Office, Brisbane.
  VICTORIA: Public Library of Victoria, Melbourne.[6]
  WESTERN AUSTRALIA: Library of Parliament of Western Australia, Perth.
BRAZIL: Secretaria de Presidencia, Rio de Janeiro.[5]
BRITISH HONDURAS: Colonial Secretary, Belize.
CAMBODIA: Ministry of Information, Phnom Penh.[4]
CANADA:
  Clerk of the Senate, Houses of Parliament, Ottawa.
  Library of Parliament, Ottawa.
CEYLON: Ceylon Ministry of Defense and External Affairs, Colombo.[5]
CHILE: Biblioteca del Congreso Nacional, Santiago.[5]
CHINA:
  Legislative Yuan, Taipei, Taiwan.[5]
  Taiwan Provincial Government, Taipei, Taiwan.
CUBA:
  Biblioteca del Capitolio, Habana.
  Biblioteca Pública Panamericana, Habana.[6]
CZECHOSLOVAKIA: Ceskoslovenska Akademie Ved, Prague.[5]
EGYPT: Ministry of Foreign Affairs, Egyptian Government, Cairo.[5]
FRANCE:
  Bibliothèque Assemblée Nationale, Paris.
  Bibliothèque Conseil de la République, Paris.
  Library, Organization for European Economic Cooperation, Paris.[5]
  Research Department, Council of Europe, Strasbourg.[5]
  Service de la Documentation Étrangère, Assemblée Nationale, Paris.[5]
GERMANY:
  Amerika Institut der Universität München, München.[5]
  Archiv, Deutscher Bundestag, Bonn.
  Bibliothek der Instituts für Weltwirtschaft an der Universtät Kiel, Kiel-Wik.
  Bibliothek Hessischer Landtag, Wiesbaden.[5]
  Der Bayrische Landtag, Munich.[5] [7]
  Deutsches Institut für Rechtswissenschaft, Potsdam-Babelsberg II.[6]
  Deutscher Bundesrat, Bonn.[5]
  Deutscher Bundestag, Bonn.[5]
  Hamburgisches Welt-Wirtschafts-Archiv, Hamburg.
GHANA: Chief Secretary's Office, Accra.[5]
GREAT BRITAIN:
  Department of Printed Books, British Museum, London.
  House of Commons Library, London.[5]
  N.P.P. Warehouse, H.M. Stationery Office, London.[6] [8]
  Printed Library of the Foreign Office, London.
  Royal Institute of International Affairs, London.[5]
GREECE: Bibliothèque, Chambre des Députés Hellênique, Athens.
GUATEMALA: Biblioteca de la Asamblea Legislativa, Guatemala.

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[4] Added during the year.
[5] Congressional Record only.
[6] Federal Register only.
[7] Three copies.
[8] Two copies.

HAITI: Bibliothèque Nationale, Port-au-Prince.
HONDURAS: Biblioteca del Congreso Nacional, Tegucigalpa.
HUNGARY: National Library, Budapest.
INDIA:
  Civil Secretariat Library, Lucknow, United Provinces.[6]
  Indian Council of World Affairs, New Delhi.[5]
  Jammu and Kashmir Constituent Assembly, Srinagar.[5]
  Legislative Assembly, Government of Assam, Shillong.[5]
  Legislative Assembly Library, Lucknow, United Provinces.
  Kerala Legislature Secretariat, Trivandrum.[5]
  Madras State Legislature, Madras.[5]
  Parliament Library, New Delhi.
  Servants of Indian Society, Poona.[5]
IRELAND: Dail Eireann, Dublin.
ISRAEL: Library of the Knesset, Jerusalem.
ITALY:
  Biblioteca Camera dei Deputati, Rome.
  Biblioteca del Senato della Republica, Rome.
  International Institute for the Unification of Private Law, Rome.[6]
  Periodicals Unit, Food and Agriculture Organization of the United Nations, Rome.[6]
JAPAN:
  Library of the National Diet, Tokyo.
  Ministry of Finance, Tokyo.
JORDAN: Parliament of the Hashemite Kingdom of Jordan, Amman.[5]
KOREA: Library, National Assembly, Seoul.
LUXEMBOURG: Assemblée Commune de la C.E.C.A., Luxembourg.
MEXICO:
  Dirección, General Information, Secretaría de Gobernación, Mexico, D.F.
  Biblioteca Benjamin Franklin, México, D.F.
  AGUASCALIENTES: Gobernador del Estado de Aguascalientes, Aguascalientes.
  BAJA CALIFORNIA: Gobernador del Distrito Norte, Mexicali.
  CAMPECHE: Gobernador del Estado de Campeche, Campeche.
  CHIAPAS: Gobernador del Estado de Chiapas, Tuxtla Guitiérrez.
  CHICHUAHUA: Gobernador del Estado de Chihuahua, Chihuahua.
  COAHUILA: Periódico Oficial del Estado de Coahuila, Palacio de Gobierno, Saltillo.
  COLIMA: Gobernador del Estado de Colima, Colima.
  GUANAJUATO: Secretaría General de Gobierno del Estado, Guanajuato.[6]
  JALISCO: Biblioteca del Estado, Guadalajara.
  MÉXICO: Gaceta del Gobierno, Toluca.
  MICHOACÁN: Secretaría General de Gobierno del Estado de Miochoacán, Morelia.
  MORELOS: Palacio de Gobierno, Cuernavaca.
  NAYARIT: Gobernador de Nayarit, Tepic.
  NUEVO LEÓN: Biblioteca del Estado, Monterrey.
  OAXACA: Periódico Oficial, Palacio de Gobierno, Oaxaca.[6]
  PUEBLA: Secretaría General de Gobierno, Puebla.
  QUERÉTARO: Secretaría General de Gobierno, Sección de Archivo, Querétaro.
  SINALOA: Gobernador del Estado de Sinaloa, Culiacán.

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[5] Congressional Record only.
[6] Federal Register only.

Mexico—Continued
  SONORA: Gobernador del Estado de Sonora, Hermosillo.
  TAMAULIPAS: Secretaría General de Gobierno, Victoria.
  VERACRUZ: Gobernador del Estado de Veracruz, Departamento de Gobernación y Justica, Jalapa.
  YUCATÁN: Gobernador del Estado de Yucatán, Mérida.
NETHERLANDS: Koninklijke Bibliotheek, The Hague.[6]
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Library of the Norwegian Parliament, Oslo.
PANAMA: Biblioteca Nacional, Panama City.[5]
PHILIPPINES: House of Representatives, Manila.
POLAND: Kancelaria Rady, Panstwa, Biblioteka Sejmova, Warsaw.
PORTUGUESE TIMOR: Repartição Central de Administração Civil, Dili.[6]
RHODESIA AND NYASALAND: Federal Assembly, Salisbury.[6]
RUMANIA: Biblioteca Centrala de Stat RPR, Bucharest.
SPAIN: Boletin Oficial del Estado, Presidencia del Gobierno, Madrid.[6]
SWITZERLAND: Bibliothèque, Bureau International du Travail, Geneva.[6]
  International Labor Office, Geneva.[6] [8]
  Library, United Nations, Geneva.
TOGO: Ministere d'Etat, de l'Interieur, de l'Information et de la Presse, Lome.[4]
UNION OF SOUTH AFRICA:
  CAPE OF GOOD HOPE: Library of Parliament, Cape Town.
  TRANSVAAL: State Library, Pretoria.
UNION OF SOVIET SOCIALIST REPUBLICS: Fundamental'niia Biblioteka Obschestvennykh Nauk, Moscow.
URUGUAY: Diario Oficial, Calle Florida 1178, Montevideo.
YUGOSLAVIA: Bibliografski Institut FNRJ, Belgrade.[8]

FOREIGN EXCHANGE SERVICES

Exchange publications for addressees in the countries listed below are forwarded by freight to the exchange services of those countries. Exchange publications for addressees in other countries are forwarded directly by mail.

LIST OF EXCHANGE SERVICES

AUSTRIA: Austrian National Library, Vienna.
BELGIUM: Service des Échanges Internationaux, Bibliothèque Royale de Belgique, Bruxelles.
CHINA: National Central Library, Taipei, Taiwan.
CZECHOSLOVAKIA: Bureau of International Exchanges, University Library, Prague.
DENMARK: Institut Danois des Échanges Internationaux, Bibliothèque Royale, Copenhagen.
EGYPT: Government Press, Publications Office, Bulaq, Cairo.
FINLAND: Delegation of the Scientific Societies, Helsinki.
FRANCE: Service des Échanges Internationaux, Bibliothèque Nationale, Paris.
GERMANY (Eastern): Deutsche Staatsbibliothek, Berlin.
GERMANY (Western): Deutsche Forschungsgemeinschaft, Bad Godesberg.

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[4] Added during the year.
[5] Congressional Record only.
[6] Federal Register only.
[8] Two copies.

HUNGARY: National Library, Széchényi, Budapest.
INDIA: Government Printing and Stationery, Bombay.
INDONESIA: Minister of Educaiton, Djakarta.
ISRAEL: Jewish National and University Library, Jerusalem.
ITALY: Ufficio degli Scambi Internazionali, Ministero della Pubblica Istruzione, Rome.
JAPAN: Division for Interlibrary Services, National Diet Library, Tokyo.
KOREA: Korean Library Association, Seoul.
NETHERLANDS: International Exchange Bureau of the Netherlands, Royal Library, The Hague.
NEW SOUTH WALES: Public Library of New South Wales, Sydney.
NEW ZEALAND: General Assembly Library, Wellington.
NORWAY: Service Norvégien des Échanges Internationaux, Bibliothèque de l'Université Royale, Oslo.
PHILIPPINES: Bureau of Public Libraries, Department of Education, Manila.
POLAND: Service Polonais des Échanges Internationaux, Bibliothèque Nationale, Warsaw.
PORTUGAL: Secção de Trocas Internacionais, Biblioteca Nacional, Lisbon.
QUEENSLAND: Bureau of International Exchange of Publications, Chief Secretary's Office, Brisbane.
RUMANIA: International Exchange Service, Biblioteca Centrala de Stat, Bucharest.
SOUTH AUSTRALIA: South Australian Government Exchanges Bureau, Government Printing and Stationery Office, Adelaide.
SPAIN: Junta de Intercambio y Adquisición de Libros y Revistas para Bibliotecas Públicas, Ministerio de Educación Nacional, Madrid.
SWEDEN: Kungliga Biblioteket, Stockholm.
SWITZERLAND: Service Suisse des Échanges Internationaux, Bibliothèque Centrale Fédérale, Palais Fédéral, Berne.
TASMANIA: Secretary of the Premier, Hobart.
TURKEY: National Library, Ankara.
UNION OF SOUTH AFRICA: Government Printing and Stationery Office, Cape Town.
UNION OF SOVIET SOCIALIST REPUBLICS: Bureau of Book Exchange, State Lenin Library, Moscow.
VICTORIA: Public Library of Victoria, Melbourne.
WESTERN AUSTRALIA: State Library, Perth.
YUGOSLAVIA: Bibliografski Institut FNRJ, Belgrade.

Respectfully submitted.

J. A. COLLINS, *Chief.*

DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.

Report on the National Gallery of Art

Sir: I have the honor to submit, on behalf of the Board of Trustees, the twenty-third annual report of the National Gallery of Art, for the fiscal year ended June 30, 1960. This report is made pursuant to the provisions of section 5(d) of Public Resolution No. 14, Seventy-fifth Congress, first session, approved March 24, 1937 (50 Stat. 51).

ORGANIZATION

The statutory members of the Board of Trustees of the National Gallery of Art are the Chief Justice of the United States, the Secretary of State, the Secretary of the Treasury, and the Secretary of the Smithsonian Institution, ex officio. The five general trustees continuing in office during the fiscal year ended June 30, 1960, were Duncan Phillips, Ferdinand Lammot Belin, Chester Dale, Paul Mellon, and Rush H. Kress. On May 5, 1960, Chester Dale was reelected by the Board of Trustees to serve as President of the Gallery and Ferdinand Lammot Belin was reelected Vice President.

The executive officers of the Gallery as of June 30, 1960, are as follows:

Huntington Cairns, Secretary-Treasurer.
John Walker, Director.
Ernest R. Feidler, Administrator.
Huntington Cairns, General Counsel.
Perry B. Cott, Chief Curator.

The three standing committees of the Board, as constituted at the annual meeting on May 5, 1960, were as follows:

EXECUTIVE COMMITTEE

Chief Justice of the United States, Earl Warren, Chairman.
Ferdinand Lammot Belin.
Chester Dale, Vice Chairman.
Secretary of the Smithsonian Institution, Leonard Carmichael.
Paul Mellon.

FINANCE COMMITTEE

Secretary of the Treasury, Robert B. Anderson, Chairman.
Ferdinand Lammot Belin.
Chester Dale, Vice Chairman.
Secretary of the Smithsonian Institution, Leonard Carmichael.
Paul Mellon.

ACQUISITIONS COMMITTEE

Ferdinand Lammot Belin, Chairman.
Duncan Phillips.
Chester Dale.
Paul Mellon.
John Walker.

PERSONNEL

On June 30, 1960, full-time Government employees on the staff of the National Gallery of Art numbered 314 as compared with 299 employees as of June 30, 1959. The U.S. Civil Service regulations govern the appointment of employees paid from appropriated public funds.

A number of employees were given training under the provisions of the Government Employees Training Act.

APPROPRIATIONS

For the fiscal year ended June 30, 1960, the Congress of the United States in the regular annual appropriation for the National Gallery of Art provided $1,834,000 to be used for salaries and expenses in the operation and upkeep of the Gallery, the protection and care of works of art acquired by the Board of Trustees, and all administrative expenses incident thereto, as authorized by Joint Resolution of Congress approved March 24, 1937 (20 U.S.C. 71–75; 50 Stat. 51).

The following expenditures and encumbrances were incurred:

Personal services	$1, 451, 909. 94
Other than personal services	381, 879. 06
Unobligated balance	211. 00
Total	1, 834, 000. 00

ATTENDANCE

There were 965,190 visitors to the Gallery during the fiscal year 1960, an increase of 13,582 over the total attendance of 951,608 for the fiscal year 1959. The average daily number of visitors was 2,659.

ACCESSIONS

There were 620 accessions by the National Gallery of Art as gifts, loans, or deposits during the fiscal year.

GIFTS

During the year the following gifts or bequests were accepted by the Board of Trustees:

PAINTINGS

Donor	*Artist*	*Title*
Mrs. Cooper R. Drewry	Eichholtz	The Ragan Sisters.
Henry Prather Fletcher	Savage, attr. to	George Washington.
Col. and Mrs. Edgar W. Garbisch.	Joshua Johnston	The Westwood Children.
Do	Stock	The Wilcox Children.
Do	Unknown	Jonathan Benham.
Do	do	Baby in Blue Cradle.
Do	do	Lady in White.

Donor	*Artist*	*Title*
Col. and Mrs. Edgar W. Garbisch.	Unknown	Boy in Blue Coat.
Do	do	Child with Rocking Horse.
Do	do	Leaving the Manor House.
Do	do	Five Children of the Budd Family.
Do	do	Civil War Battle Scene.
Do	do	Little Girl and the Cat.
Do	do	Profile Portrait of a Lady in White.
Rupert L. Joseph	Ruisdael	Park with a Country House.
Mrs. Eleanor Lothrop and Gordon Abbott.	Copley	Colonel Fitch and His Sisters
National Gallery of Art Purchase Fund—Andrew W. Mellon Gift.	West	The Battle of La Hogue.
Mrs. Lillian S. Timken	Bellini, attr. to	Portrait of a Man.
Do	Boucher	Diana and Endymion.
Do	Boucher	The Love Letter.
Do	Corot	St. Sebastian Succored by Holy Women.
Do	Correggio, attr. to	Madonna and Child with the Infant St. John.
Do	Cotes	Portrait of a Lady.
Do	Cotes	Protrait of a Lady.
Do	Dou	The Hermit.
Do	Drouais	Madame du Barry.
Do	Dutch School, after Ter Borch.	The Concert.
Do	Flemish School, Manner of Van Dyck.	Twelve Apostles.
Do	Fragonard	The Happy Family.
Do	French School	Young Woman and Man.
Do	French School, after Pater.	Fête Champêtre.
Do	French School, XVIII Century.	Divertissement.
Do	Fry	Egyptian Temple.
Do	Fry	Flock of Sheep.
Do	Fry	Shepherd and Sheep.
Do	Greuze	Girl with Birds.
Do	Greuze	Girl with Folded Arms.
Do	After Van Dyck	Children of Oliver St. John, Earl of Bolingbroke.
Do	Henner	Reclining Nude.
Do	Herring	Horses.
Do	Italian School	Head of a Woman.
Do	Italian School	The Adoration of the Shepherds.
Do	Lely	Barbara Villiers, Duchess of Cleveland.

Donor	*Artist*	*Title*
Mrs. Lillian S. Timken	Moroni	Gian Federigo Madruzzo.
Do	Nattier	Portrait of a Lady.
Do	Neeffs	Antwerp Cathedral.
Do	Portuguese School	Four-Panel Screen.
Do	Romney	Sir Archibald Campbell.
Do	Rubens, School of	St. Peter.
Do	Rubens, School of	Peter Paul Rubens.
Do	Russian School	The Crucifixion.
Do	Russian School	Christ Blessing.
Do	Tiepolo	Bacchus and Ariadne.
Do	Marco Tintoretto	Pietà.
Do	Titian, attr. to	Group Portrait.
Do	Titian, attr. to	Self-Portrait.
Do	Turner	The Evening of the Deluge.
Do	Vigée-Lebrun, attr. to	Marie-Antoinette.
Do	Wilkie	Camping Gypsies.
	SCULPTURE	
Rupert L. Joseph	Epstein	An American Soldier.
National Gallery of Art Purchase Fund—Andrew W. Mellon Gift.	Italian, XVI Century.	Mercury.
	DECORATIVE ARTS	
James Hazen Hyde	Seventeenth-Century Tapestry.	America.

GRAPHIC ARTS

During the year Lessing J. Rosenwald increased his gift to the Gallery by 77 additional prints and drawings.

A drawing by Bellows, "Three Figures in a Surrey," was given to the Gallery by Mrs. Andrew G. Carey, and a print by DeLaunay, after Fragonard, entitled "Les Voeux Acceptés" was purchased by the Gallery with funds derived from the Print Purchase Fund.

OTHER GIFTS

During the fiscal year 1960 gifts of money were made by The A. W. Mellon Educational and Charitable Trust, Old Dominion Foundation, Avalon Foundation, Mrs. E. C. Chadbourne, George M. and Pamela S. Humphrey Fund, and the Five Towns Foundation.

EXCHANGE OF WORK OF ART

In exchange for a print by Israhel van Meckenem entitled "The Annunciation," Lessing J. Rosenwald gave the National Gallery of Art a superior impression of the same print.

WORKS OF ART ON LOAN

The following works of art were received on loan by the Gallery:

From	*Artist*	*Title*
Robert Woods Bliss, Washington, D.C.		16 objects of Pre-Columbian Art.
Mrs. Mellon Bruce, New York, N.Y.	Pissarro	Spring at Louveciennes.
Chester Dale, New York, N.Y.	Bellows	Blue Morning.
Do	Monet	The Seine at Giverny.
Col. and Mrs. Edgar W. Garbisch, New York, N.Y.	Polk	John Hart.
Do	do	Mrs. John Hart and Daughter.
Do	Unknown	Adeline Harwood.
Do	do	Quail.
Do	do	Five Master.
Eugene and Agnes Meyer, Washington, D.C.	Cézanne	Vase of Flowers.
Do	do	Portrait of a Sailor.
Do	do	Le Château Noir.
Do	do	Still Life.
Do	Manet	Do.
Do	Renoir	Man Lying on Sofa.
Do	do	Nude.
Do	Dufresne	Still Life.

WORKS OF ART ON LOAN RETURNED

The following works of art on loan were returned during the fiscal year:

To	*Artist*	*Title*
Robert Woods Bliss, Washington, D.C.		8 objects of Pre-Columbian art.
Chester Dale, New York, N.Y.	Bellows	Blue Morning.
Do	Monet	The Seine at Giverny.
Col. and Mrs. Edgar W. Garbisch, New York, N.Y.	Hayes	Bare Knuckles.
Do	J. Thomas	The Ship Nancy Homeward Bound.
Do	Unknown	Miss Dennison.
Do	do	Suzanne Truax.
Do	do	The Cat.
Do	do	Twin Sisters.
Do	do	Leaving the Manor House.
The Calouste Gulbenkian Foundation, Lisbon, Portugal.		41 paintings, 36 pieces of sculpture, 10 works of graphic art, and 8 objects of decorative art.

To	*Artist*	*Title*
Miss Emily Crawford Johnson, Frederick, Md.	Vanderlyn	President James Monroe.
Samuel H. Kress Foundation New York, N.Y.	Andrea del Sarto	Charity.
Eugene and Agnes Meyer, Washington, D.C.	Cézanne	Vase of Flowers.
Do	do	Portrait of a Sailor.
Do	do	Le Chateau Noir.
Do	do	Still Life.
Do	Dufresne	Do.
Do	Manet	Do.
Do	Renoir	Man Lying on Sofa.
Do	do	Nude.
Mr. and Mrs. Carleton Mitchell, Annapolis, Md.	Cézanne	Man with Crossed Arms.
Do	Van Gogh	The Stevedores.
Robert H. Thayer, New York, N.Y.	Copley	Harrison Gray.
Do	do	Elizabeth Gray Otis.
Do	Stuart	Samuel Alleyne Otis.

WORKS OF ART LENT

During the fiscal year the Gallery lent the following works of art for exhibition purposes:

To	*Artist*	*Title*
American Federation of Arts, New York, N.Y.	Bundy	Vermont Lawyer.
Do	Unknown	Mahantango Valley Farm.
Corcoran Gallery of Art, Washington, D.C.	Eichholtz	The Ragan Sisters.
Do	Harding	Charles Carroll of Carrollton.
Do	Joshua Johnston	The Westwood Children.
Do	Stuart	William Thornton.
Do	Stuart	Mrs. William Thornton.
Do	Sully	Governor Charles Ridgely of Maryland.
Do	Unknown	The End of the Hunt.
Daughters of the American Revolution, Washington, D.C.	Pine	General William Smallwood.
Newark Museum, Newark, N.J.	Boucher	Tête-a-Tête (drawing).
Smithsonian Institution, Political History Division, Washington, D.C.		The Presidents' Fan.
Woodlawn Plantation, Mt. Vernon, Va.	Polk	General Washington at Princeton.

EXHIBITIONS

The following exhibitions were held at the National Gallery of Art during the fiscal year 1960:

Etchings and Mezzotints from Turner's *Liber Studiorum.* Gift of Miss Ellen T. Bullard and from the Rosenwald Collection. Continued from previous fiscal year. June 25, 1959, to November 8, 1959.

Exhibition of recent accessions: *The Tragedian* by Manet and two paintings by Whistler, *Self-Portrait* and *George W. Vanderbilt.* September 6, 1959, through October 5, 1959.

American Prints Today—1959. Exhibition of 62 etchings, engravings, woodcuts, lithographs, and serigraphs, done by American artists between January 1956 and December 1958; September 15, 1959, through October 18, 1959.

Christmas Prints. From the Rosenwald Collection. December 14, 1959, to January 11, 1960.

Prints by Toulouse-Lautrec. November 9, 1959, through December 13, 1959. Reinstalled January 12, 1960, to continue into the next fiscal year.

Haniwa—Japanese Burial Mound Figures. Lent by the Japanese Government. January 10, 1960, through February 21, 1960.

Honoré Daumier. Sculpture, drawings, and lithographs by Honoré Daumier from the Rosenwald Collection. March 12, 1960, through June 26, 1960.

TRAVELING EXHIBITIONS

Rosenwald Collection.—Special exhibitions of prints and drawings from the Rosenwald Collection were circulated during the fiscal year to 28 museums, universities, schools, and art centers in the United States. In addition three exhibitions were sent to the Haus der Kunst, Munich, Germany; Belvedere Museum, Vienna, Austria; and the Oesterreichische Galerie, Vienna, Austria.

Index of American Design.—During the fiscal year 1960, 19 traveling exhibitions (988 plates) with 26 bookings were circulated to Brazil, Germany, Pakistan, and 14 States in the United States.

CURATORIAL ACTIVITIES

Under the direction of Dr. Perry B. Cott, chief curator, the curatorial department accessioned 143 gifts to the Gallery during the fiscal year 1960. Advice was given regarding 561 works of art brought to the Gallery for expert opinion and 27 visits to collections were made by members of the staff in connection with offers of gifts. About 3,100 inquiries, many of them requiring research, were answered verbally and by letter.

Miss Elizabeth Mongan, curator of graphic arts, served on the board of directors of the Print Council of America again this year. She lectured on Graphic Arts at the Norfolk Museum of Art, Currier Art Gallery, Fogg Art Museum, Louisiana State University, and Bryn Mawr College.

Dr. H. Lester Cooke, museum curator, was awarded a U.S. Government grant under the International Exchange Program and lectured in Italy from November 1959 to April 1960.

William P. Campbell, curator of painting, assisted at the judging of the Navy Department Art exhibition. John Pancoast, registrar, assisted at the judging of the exhibition for the Military District of Washington.

Dr. Katharine Shepard, assistant curator of graphic arts, served again as secretary of the Washington Society of the Archaeological Institute of America. She also was an official delegate to the general meeting of the Archaeological Institute in New York City, December 1959.

The Richter Archives received and cataloged over 260 photographs on exchange from museums here and abroad; 916 photographs were purchased, and about 10,000 reproductions clipped from magazines and catalogs were added to the Richter Archives.

RESTORATION

Francis Sullivan, resident restorer of the Gallery, made regular and systematic inspection of all works of art in the Gallery, and periodically removed dust and bloom as required. He relined 15 paintings and gave special treatment to 40. Twenty-eight paintings were X-rayed as an aid in research. Experiments were continued with the application of 27H and other synthetic varnishes developed by the National Gallery of Art Fellowship at the Mellon Institute of Industrial Research, Pittsburgh, Pa. Proofs of all color reproductions of Gallery paintings were checked and approved, and technical advice on the conservation of paintings was furnished to the public upon request.

Mr. Sullivan inspected all Gallery paintings on loan in Government buildings in Washington. He also gave advice on and special treatment to works of art belonging to other Government agencies including the White House, the Freer Gallery of Art, and the Smithsonian Institution.

PUBLICATIONS

Dr. Perry B. Cott, chief curator, contributed an article entitled "The National Gallery of Art in Washington" to *Westermanns Monatshefte*, February 1960.

Dr. Fern Rusk Shapley, assistant chief curator, contributed an article entitled "A Note on 'The Three Philosophers' by Giorgione," to *The Art Quarterly*, Autumn, 1959. She also wrote two booklets entitled "Early Italian Painting" and "Later Italian Paintings" published by the National Gallery of Art.

John Pancoast, registrar, wrote a review for *The American Scholar*, Winter, 1960.

Dr. H. Lester Cooke, museum curator, wrote two articles on American Art for *Amerika*, and the texts for 10 filmstrips on "History of Art" published by Encyclopaedia Britannica Films, Inc. He also wrote two booklets entitled "British Painting" and "French Painting of the 16th–18th Centuries."

Thomas P. Baird, museum curator, wrote the booklet entitled "Dutch Painting."

During the fiscal year 1960 the Publications Fund published 8 of what will be a series of 10 booklets on the schools of painting in the Gallery collection, each with 16 color plates and text by a staff member. These paperbound booklets, priced at 25 cents, are intended to give the general public an introduction to art history as represented in the Gallery's collection. One new catalog entitled "Paintings and Sculpture from the Kress Collection" was produced. The fifth annual series of the A. W. Mellon Lectures in the Fine Arts, "Art and Illusion," by E. H. Gombrich, published in book form, was placed on sale, as were two books written by staff members: "Benjamin West and the Taste of His Times," by Grose Evans, and "The History of Western Art," by Dr. Erwin O. Christensen.

Two new color postcards were made, as well as seven new Christmas-card subjects in color and three in black-and-white.

The Publications Fund took over distribution of the slidestrips, filmstrips, and recordings previously sold by the Educational Department and revised editions of most of these publications were produced during the year. Five sets of color slides issued by the Audubon Society reproducing Audubon prints in the Gallery collection were made available in the Information Rooms.

The growth of sales activities is indicated by the fact that 200,486 persons in fiscal year 1960 made purchases in the Gallery's Information Rooms, compared with 184,254 in fiscal year 1959.

EDUCATIONAL PROGRAM

The program of the Educational Office was carried out under the supervision of Dr. Raymond S. Stites, curator in charge of educational work. The staff lectured and conducted tours in the Gallery on the works of art in its collection.

The attendance for the General Tours, Tours of the Week, and Picture of the Week talks, totaled 40,607 persons, and that of the auditorium lectures on Sunday afternoons totaled 13,005 persons.

Appointments were arranged for 313 special lectures, tours, and conferences. A total of 10,418 persons was served in this manner. These included groups from Government Agencies, the Armed Forces, foreign students, religious organizations, Girl Scouts, 4-H Clubs, conventions, and local chapters of women's organizations.

The program of training volunteer docents continued, and during the fiscal year 1960 special instruction was given to 100 volunteers. By special arrangement with the school systems of the District of Columbia and surrounding counties of Maryland and Virginia these volunteers conducted tours for 1,266 classes with a total of 46,584 children, an increase of 6,229 children visiting the National Gallery of Art.

The staff of the Educational Office delivered six lectures in the auditorium on Sunday afternoons and 30 lectures were given by guest speakers. Wilmarth Sheldon Lewis delivered the Ninth Annual Series of the A. W. Mellon Lectures in the Fine Arts, beginning on February 21, for six consecutive Sundays. His subject was Horace Walpole.

The Educational Office now has 10 sets of traveling exhibitions and an exhibition publicizing teachers' aids offered by the department. These are lent free of charge except for transportation costs to schools, clubs, libraries, and universities throughout the country. The exhibitions were circulated to 42 such places with an estimated total of 20,000 persons viewing them.

Fifteen copies of the film "Your National Gallery of Art" were on permanent loan in distributiton centers; three copies of the new film "Art in the Western World" were circulated through the Educational Office to 44 borrowers. This latter film is sold through Encyclopaedia Britannica Films, Inc. A few copies of a film, made from a television show, entitled "Time Enough To See a World" have been deposited in the Educational Office.

The slide library has a total of 40,624 slides in the permanent and lending collections. During the year 3,018 slides were added to the collection; 1,118 borrowers used 41,601 slides from the lending collection.

A number of slide lectures consisting of color slides and a lecture text are available to schools, clubs, and churches on a loan basis.

Members of the staff participated in outside lectures, and taught night classes in the local universities. Four new slide lectures were completed, and illustrated booklets on three schools of painting represented in the National Gallery of Art were completed by the staff members.

A printed calendar of events announcing the Gallery's activities and publications was prepared by the Educational Office and distributed monthly to a mailing list of 7,200 names.

The staff members prepared and delivered 16 new 10-minute talks over radio station WGMS during the intermissions of the Sunday evening concert broadcasts.

LIBRARY

Important contributions to the library recorded by Miss Ruth E. Carlson, librarian, and her staff included 398 books, pamphlets, periodicals, and subscriptions, and a group of 916 photographs, purchased from private funds. Government funds were used for the purchase of 12 books and 26 periodicals and for the binding of 177 volumes of periodicals. Gifts to the library included 665 books and pamphelets; 993 books, pamphlets, periodicals, and bulletins were received through exchange arrangements or as complimentary copies from institutions. The library cataloged and classified 1,384 publications; 2,237 periodicals were recorded, and 6,115 catalog cards were filed; 191 cards were sent to the Union Catalogue of the Library of Congress. The library borrowed 945 books on Interlibrary Loan, and the Library of Congress lent 881 books.

The library is the depository for photographs of the works of art in the National Gallery of Art's collections. A stock of reproductions is maintained for use in research, for exchange with other institutions, and for sale to interested individuals. Approximately 5,747 photographs were stocked in the library during the year. The library filled 1,252 orders for photographs. Sales to the general public amounted to $1,280 covering about 1,982 photographs. There were 288 permits for reproduction of 719 subjects processed in the library.

INDEX OF AMERICAN DESIGN

The work of the Index of American Design during the fiscal year 1960 continued under the direction of Dr. Erwin O. Christensen. Sixteen sets of color slides (793 slides) in 81 bookings were circulated throughout this country and in India. In addition, 79 individual slides were lent for lecture and study purposes. Lecture notes were completed for six slide sets, and 327 photographs of Index material were used for study and publication. The photographic files have been increased by 82 negatives and 903 prints. Approximately 300 visitors used Index material for the purpose of research, publication, and design.

The curator of the Index has continued his participation in the orientation program of USIA personnel.

The photographic file inventory project which was begun last year was completed.

In order to complete the Index, the curator traveled to Indiana to note material in historical societies and museums which may eventually be recorded.

A pamphlet on the 18th century decorative arts in the newly opened Widener rooms was prepared by the department.

The curator published *The History of Western Art* (Volume 1, the New American Library of World Literature). Expert opinions and advisory services were rendered by the curator. Gifts to the Index included a photograph of carved-wood gable figures given by H. F. Kuether, and a "Holly Doll" made and given by Miss Helen Bullard.

MAINTENANCE OF THE BUILDING AND GROUNDS

The Gallery building, the mechanical equipment, and the grounds, have been maintained at the established standards throughout the year, under the direction of Ernest R. Feidler, administrator, and his staff.

The promenade tile on four small roof areas at the East and West Garden Courts was removed and replaced with new copper roofing. The design and installation of the replaced roofing were accomplished by the Gallery maintenance staff.

In keeping with the recommendations of the Committee on the Building and the resolution of the Board of Trustees, in the southwest corner of the ground floor there were completed three new gallery rooms to provide a more suitable background for the French works of art in the Widener Collection and to place on permanent view the Rembrandt drawings in the Widener Collection, which have heretofore been exhibited periodically. One of these rooms is an 18th-century oak-paneled room once in the New York house of Dr. Hamilton Rice. Adjacent to the three new rooms a Graphic Arts area has been constructed and is now being completed. It consists of a Print Exhibition room containing 11 specially designed exhibition cases, a Print Study room, offices for the curator and assistant curator of Graphic Arts, and a print storage room.

LECTOUR

The Gallery's electronic guide system, LecTour, continued to prove its value as an effective tool for art education purposes. It was used by 84,128 visitors during fiscal year 1960, being available in 20 different exhibition areas. Two special exhibitions—one on Daumier's works and one on Japanese Haniwa—received LecTour coverage. The use during fiscal year 1960 represented an increase of more than 15 percent over use in fiscal year 1959.

Flexibility of LecTour lectures was insured by the completion during fiscal year 1960 of a sound studio with the most modern and effective equipment for expeditiously making the Gallery's own recordings and tapes.

OTHER ACTIVITIES

During the fiscal year, 40 Sunday evening concerts were given, 10 of which were given by the National Gallery of Art orchestra directed by Richard H. Bales. Two of these 10 were made possible by the Music Performance Trust Fund of the American Federation of Musicians. A string orchestra conducted by Mr. Bales furnished music during the opening of the Japanese Haniwa exhibition on January 9, 1960, and at the opening of the new Widener rooms on May 20, 1960. The five Sunday evening concerts in May were devoted to the Gallery's 17th American Music Festival. The Sunday evening concert on October 25, 1959, was dedicated to United Nations Day. All concerts were broadcast in their entirety in stereophonic sound by station WGMS–AM and FM. The Voice of America recorded portions of several Sunday concerts for transmission overseas.

Intermissions during the Sunday concerts featured radio talks by members of the Educational Department and by Mr. Bales.

During the year 12,794 copies of 17 press releases in connection with the Gallery's activities were issued. A total of 166 permits to copy works of art in the Gallery, and 96 photographic permits were issued.

In response to requests 2,862 copies of the pamphlet "A Cordial Invitation from the Director" and 2,582 copies of the Information Booklet were sent to Senators and Representatives for distribution to constituents; and 40,820 copies of the pamphlet "A Cordial Invitation from the Director" and 3,500 copies of the Information Booklet were sent to various organizations holding conventions in Washington.

The slide project begun the last fiscal year was extended, and sets of 500 color slides were placed on permanent deposit with 26 foreign universities and museums. This program was initiated to make the works of art in the National Gallery of Art better known.

A total of 110 publications on the Gallery's collections and exhibitions were sent to various museums in accordance with the Exchange Program.

Henry B. Beville, the Gallery's photographer, and his staff processed 14,567 prints, 193 black-and-white slides, 18,813 color slides, 1,862 black-and-white negatives, 67 color-separation negatives, 393 transparencies, 9 infrared photographs, and 4 ultraviolet photographs, during the fiscal year.

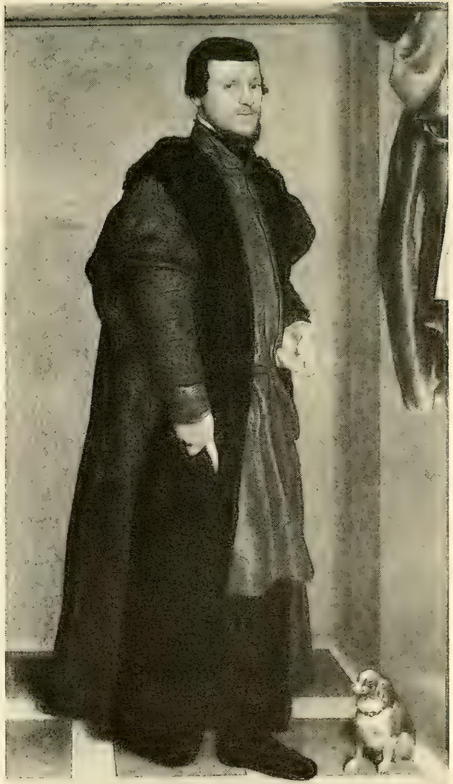
AUDIT OF PRIVATE FUNDS OF THE GALLERY

An audit of the private funds of the Gallery will be made for the fiscal year ended June 30, 1960, by Price Waterhouse & Co., public accountants, and the certificate of that company on its examination of the accounting records maintained for such funds will be forwarded to the Gallery.

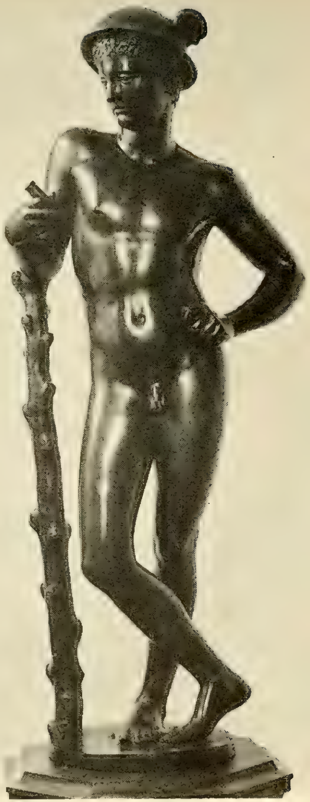
Respectfully submitted,

HUNTINGTON CAIRNS, *Secretary.*

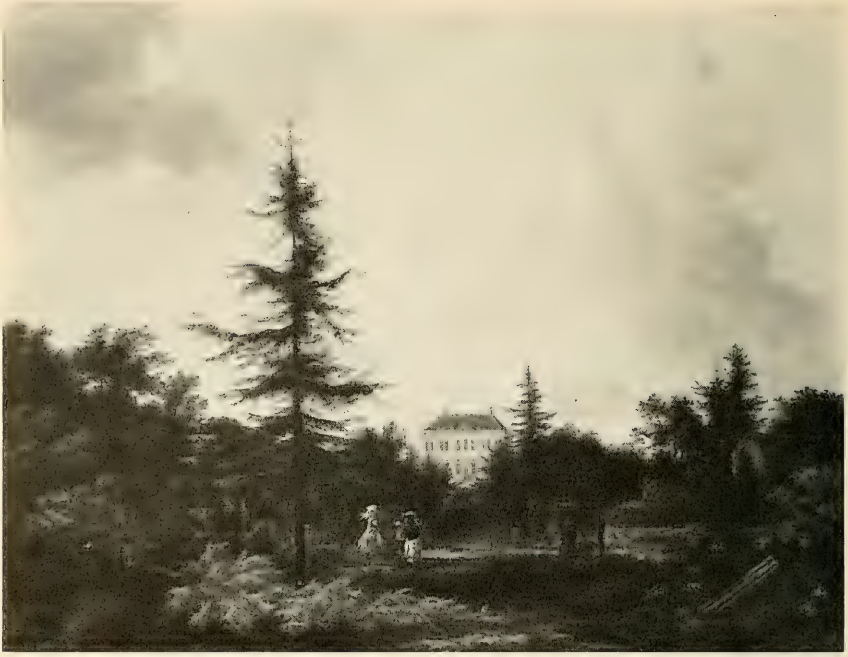
DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.



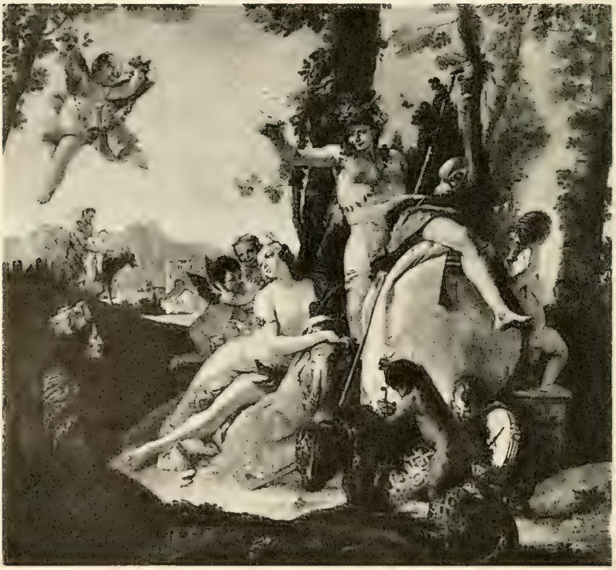
1. Giovanni Battista Moroni: Gian Federigo Madruzzo. National Gallery of Art, Timken Collection.



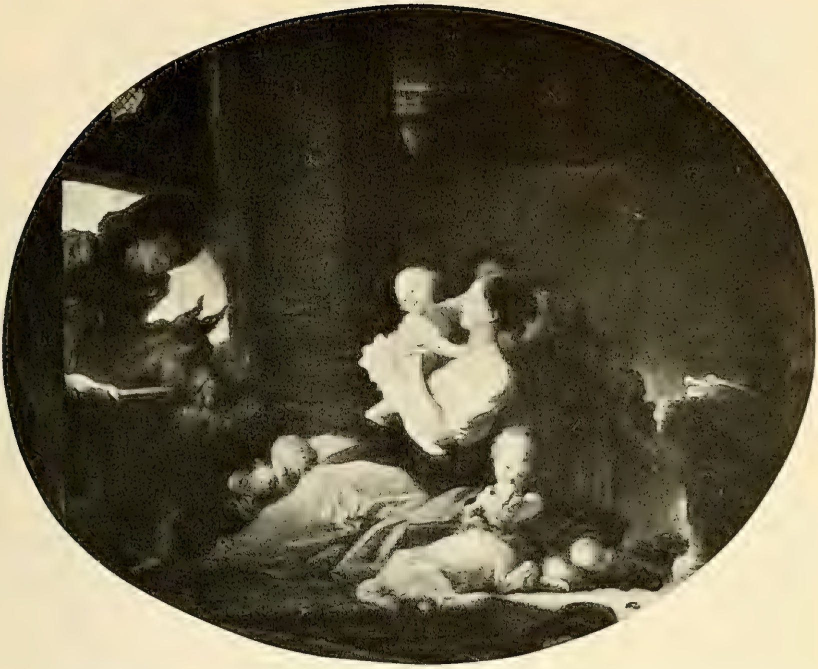
2. Italian School, XVI century: Mercury. National Gallery of Art Purchase Fund, Andrew W. Mellon Gift.



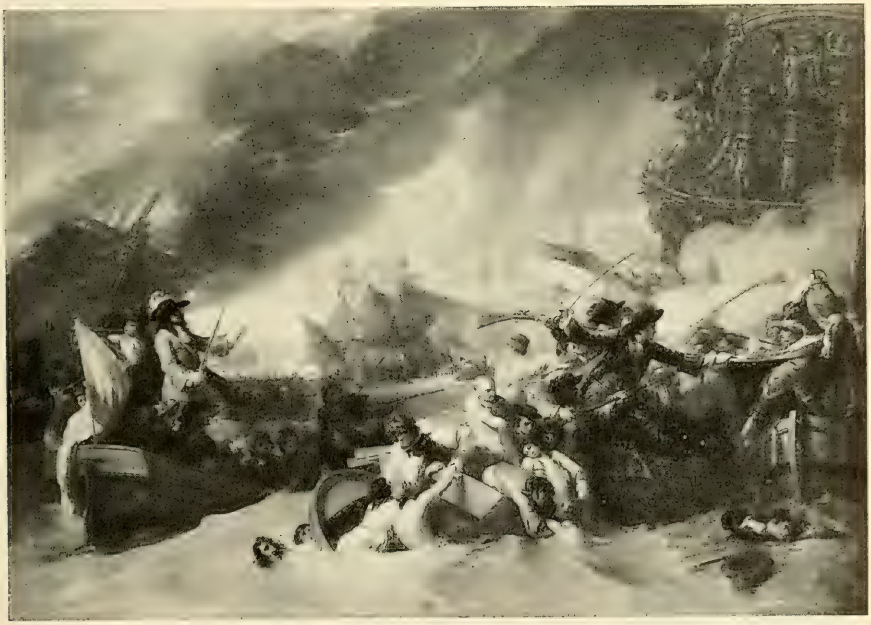
1. Jacob van Ruisdael: Park with a Country House. National Gallery of Art, Gift of Rupert L. Joseph.



2. Tiepolo: Bacchus and Ariadne. National Gallery of Art, Timken Collection.

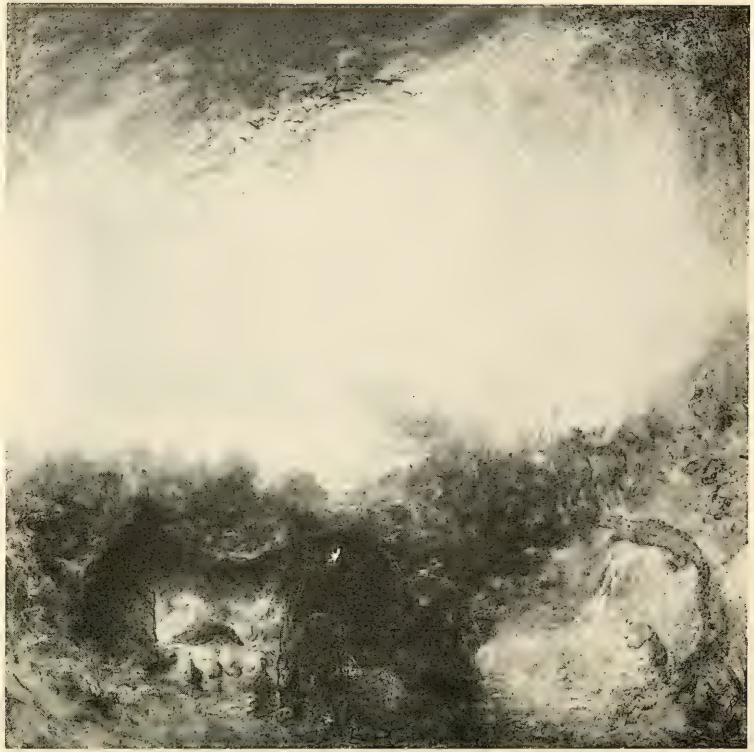


1. Fragonard: The Happy Family. National Gallery of Art, Timken Collection.



2. Benjamin West: The Battle of La Hogue. National Gallery of Art Purchase Fund, Andrew W. Mellon Gift.

1. François Boucher: The Love Letter. National Gallery of Art, Timken Collection.



2. J. M. W. Turner: The Evening of the Deluge. National Gallery of Art, Timken Collection.

Report on the Library

SIR: I have the honor to submit the following report on the activities of the Smithsonian library for the fiscal year ended June 30, 1960:

The library received 72,396 publications during the year, an increase of 19,727 over the preceding year. They came chiefly by exchange from scientific and learned societies located all over the world and written in many languages. These publications are mostly journals in the subject fields of interest to the Institution. New exchanges arranged totaled 168, while special requests for back issues of periodicals numbered 2,363. Purchased publications included 2,750 books and journals which could not be obtained in exchange.

The George H. Clark collection of manuscripts and materials on the history of radio and electronics was the largest single gift received. The transfer of this collection from the Massachusetts Institute of Technology Library was effected by Haraden Pratt of the Institute of Radio Engineers. This gift will be of great value in connection with the Smithsonian's large collection of objects in this field. Other gifts included books and journals from the American Nature Association; 356 items on paleontology from Mrs. J. B. Knight of Alexandria, Va.; another valuable collection of materials on mechanical engineering from Mrs. Carolyn H. Edwards of Glen Echo, Md.; and from the American Association for the Advancement of Science came a large donation of current periodicals. These gifts by generous donors are gratefully acknowledged. In many instances they provide difficult-to-locate source materials.

The original copper plates of the Wilkes Expedition Reports were transferred to the Smithsonian from the Library of Congress. Many of these are believed to be unpublished heretofore and will prove of valuable reference use. Even though written and published over a hundred years ago, these reports continue to be constantly requested.

To the Library of Congress were sent, by transfer, 26,052 publications, many of which were serials and monographs received in exchange; to the National Library of Medicine were sent 1,538 publications; and 516 publications were sent to other Government agencies.

The catalog section cataloged and classified 7,085 books and pamphlets, entered 25,982 periodicals, and filed 33,818 catalog cards. To be an effective key to the library's resources, the card catalog must be kept up to date. The uncataloged material located in the divisional libraries throughout the Institution hampers effective library service.

The program of discarding obsolete, ephemeral, and duplicate materials continued, with the withdrawal of 11,758 items.

In all, 9,200 volumes of valuable research materials were rebound. In addition, 2,206 items were bound or repaired by the library bindery assistant. New procedures were put into effect which resulted in a speedier and a more efficient handling of the materials to be bound. Other means of preservation, such as microfilming and laminating, will be considered for materials too fragile for commercial binding.

The reference staff answered a total of 30,050 reference and bibliographic questions in response to requests by letter, telephone, or visitors to the library. Visitors numbering 11,565 used the reference and research facilities in the reading rooms. These included, in addition to the Smithsonian staff, local and out-of-town visitors and scientists from other countries. The expanded programs of the Smithsonian have made increased demands on the library staff and its collections. Publications circulated totaled 24,253; 4,792 of these were borrowed from other libararies, chiefly the Library of Congress; 863 volumes were loaned to other libraries.

The branch library which serves the Museum of History and Technology completed a full year of operation. The staff answered 10,670 reference questions, circulated 8,505 publications, and provided service to 3,081 persons who came to the library. The program of binding and rebinding, labeling of books, acquiring of necessary source and reference materials continued in a satisfactory manner. The inventory of the collections progressed slowly because of inadequate catalog records.

There has been an increase in the use of the branch libraries of the Division of Insects and the Bureau of American Ethnology, including use by visiting scholars and other libraries. The stack areas for the Division of Radiation and Organisms and the National Collection of Fine Arts were cleaned and unwanted materials discarded.

New forms used this year and new procedures resulted in greater efficiency in the library service. The most significant improvement was the multiple charge card which has streamlined operations at the circulation desk. A complete review of the old charge file was made, resulting in a more accurate charge-card record. Other means for improvement are being studied, and a continuous review of exchange correspondence files is eliminating unnecessary routines.

The housing of the library is one of the most serious problems. Present facilities for shelving books in the main library are inadequate.

Members of the staff continued their membership in the Special Libraries Association and the American Library Association, several holding offices in both the local and national organizations. The library was represented at the annual convention of both associations.

Miss Janet S. Dickson, formerly with Pennsylvania State University Library, was appointed chief of the catalog section on October 5, 1959.

SUMMARIZED STATISTICS

ACCESSIONS

	Volumes	Total recorded volumes, 1960
Smithsonian main library (includes former office and museum libraries)	2, 887	329, 437
Museum of History and Technology	2, 626	
Astrophysical Observatory (including Radiation and Organisms)	109	15, 187
Bureau of American Ethnology	513	38, 262
National Air Museum	132	709
National Collection of Fine Arts	78	14, 237
National Zoological Park	6	4, 293
Total	6, 351	402, 125

Unbound volumes of periodicals and reprints and separates from serial publications, of which there are many thousands, have not been included in these totals.

EXCHANGES

New exchanges arranged	168
Specially requested publications received	2, 363

CATALOGING

Volumes cataloged	7, 085
Cataloged cards filed	33, 818

PERIODICALS

Periodical parts entered	25, 982

CIRCULATION

Loans of books and periodicals	24, 253

Circulation in the divisional libraries is not counted except in the Division of Insects.

BINDING AND REPAIR

Volumes sent to the bindery	9, 200
Volumes repaired in the library	2, 206

Respectfully submitted.

Ruth E. Blanchard, *Librarian.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

Report on Publications

SIR: I have the honor to submit the following report on the publications of the Smithsonian Institution and its branches for the year ended June 30, 1960:

The publications of the Smithsonian Institution are issued partly from federally appropriated funds (Smithsonian Reports and publications of the National Museum, the Bureau of American Ethnology, and the Astrophysical Observatory) and partly from private endowment funds (Smithsonian Miscellaneous Collections, publications of the Freer Gallery of Art, and some special publications). The Institution also edits and publishes under the auspices of the Freer Gallery of Art the series Ars Orientalis, which appears under the joint imprint of the University of Michigan and the Smithsonian Institution. The fourth volume is this series was in press at the close of the year. In addition, the Smithsonian publishes a guidebook, a picture pamphlet, postcards and a postcard folder, a color-picture album, color slides, a filmstrip on Smithsonian exhibits, a coloring book for children, and popular publications on scientific and historical subjects related to its important exhibits and collections for sale to visitors. Through its publication program the Smithsonian endeavors to carry out its founder's expressed desire for the diffusion of knowledge.

During the year the Institution published 11 papers and title page and contents to 4 volumes in the Miscellaneous Collections; 1 Annual Report of the Board of Regents and separates of 20 articles in the General Appendix; 1 Annual Report of the Secretary; 1 special publication; and reprints of 3 volumes of Miscellaneous Collections.

The U.S. National Museum issued 1 Annual Report, 4 Bulletins, 20 Proceedings papers and title page, contents, and index for 2 Proceedings volumes and 2 papers in the Series Contributions from the U.S. National Herbarium.

The Bureau of American Ethnology issued 1 Annual Report and 5 Bulletins.

The Astrophysical Observatory issued 8 numbers in the series Smithsonian Contributions to Astrophysics.

The Smithsonian Traveling Exhibition Service, under the National Collection of Fine Arts, published 2 catalogs.

The Freer Gallery of Art issued 1 paper in its Occasional Papers series, 2 catalogs, and volume 3 of Ars Orientalis.

DISTRIBUTION

In all, 661,370 copies of publications and miscellaneous items were distributed. *Publications:* 33 Contributions to Knowledge, 31,963 Smithsonian Miscellaneous Collections, 7,373 Annual Report volumes and 23,284 pamphlet copies of Report separates, 44,798 special publications, 233 reports of the Harriman Alaska Expedition, 47,497 publications of the National Museum, 31,547 publications of the Bureau of American Ethnology, 26,671 publications of the National Collection of Fine Arts, 1,112 publications of the Freer Gallery of Art, 16,243 publications of the Astrophysical Observatory, 2,944 Reports of the American Historical Association, and 3,688 publications not issued by the Smithsonian Institution. *Miscellaneous items:* 232 North American Wild Flowers and 6 Wild Flower prints, 4 Pitcher Plant volumes, 48,656 Guide Books, 17,473 picture pamphlets, 255,271 postcards and postcard folders, 20,794 color slides, 78,425 information leaflets, 10 New Museum of History and Technology pamphlets. There were also distributed 401 statuettes, 2,337 Viewmaster reels, and 1 filmstrip and 1 filmstrip record.[1]

SMITHSONIAN MISCELLANEOUS COLLECTIONS

In this series, under the immediate editorship of Ruth B. MacManus, there were issued 11 papers and title pages and contents of 4 volumes, as follows:

Volume 119

Title page and table of contents. (Publ. 4384.) [July] 1959.

Volume 135

Title page and table of contents. (Publ. 4386.) [August] 1959.

Volume 136

Title page and table of contents. (Publ. 4387.) [August] 1959.

Volume 138

No. 5. A biological study of Katmai National Monument, by Victor H. Cahalane. 246 pp., 17 pls., 4 figs. (Publ. 4376.) Aug. 20, 1959. ($3.00.)

Title page and table of contents. (Publ. 4418.) [March] 1960.

Volume 139

No. 2. The birds of Isla Escudo de Veraguas, Panama, by Alexander Wetmore. 27 pp., 1 pl., 3 figs. (Publ. 4378.) July 8, 1959. (50 cents.)

No. 3. Further observations on distribution of patterns of coagulation of the hemolymph in neotropical insects, by Charles Grégoire. 23 pp. (Publ. 4379.) Aug. 18, 1959. (40 cents.)

No. 4. A review of the genus *Hoplomys* (thick-spined rats), with description of a new form from Isla Escudo de Veraguas, Panama, by Charles O. Handley, Jr. 10 pp., 1 fig. (Publ. 4380.) July 3, 1959. (25 cents.)

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[1] Additional copies of the Institution's filmstrip and record, "Let's Visit the Smithsonian," were distributed through the Society for Visual Education, Chicago, Ill.

No. 5. Genera of Tertiary and Recent rhynchonellid brachiopods, by G. Arthur Cooper. 90 pp., 22 pls., 1 fig. (Publ. 4382.) Nov. 23, 1959. ($2.00.)

No. 6. A revision of the Silurian bryozoan genus *Trematopora*, by Richard S. Boardman. 14 pp., 2 pls., 1 fig. (Publ. 4383.) Oct. 20, 1959. (50 cents.)

No. 7. Early Tertiary *Apheliscus* and *Phenacodaptes* as pantolestid insectivores, by C. Lewis Gazin. 7 pp., 2 pls. (Publ. 4385.) Aug. 12, 1959. (25 cents.)

No. 8. The anatomical life of the mosquito, by R. E. Snodgrass. 87 pp., 30 figs. (Publ. 4388.) Nov. 4, 1959. ($1.00.)

No. 9. A long-range forecast of United States precipitation, by C. G. Abbot. 78 pp., 12 figs., 9 charts. (Publ. 4390.) Mar. 23, 1960. ($1.25.)

No. 11. A classification for the birds of the world, by Alexander Wetmore. 37 pp. (Publ. 4417.) June 23, 1960. (40 cents.)

Volume 140

No. 1. Classification and multiplicity of growth layers in the branches of trees, by Waldo S. Glock, R. A. Studhalter, and Sharlene R. Agerter. 294 pp., 36 pls., 51 figs. (Publ. 4421.) June 17, 1960. ($5.00.)

SMITHSONIAN ANNUAL REPORTS

REPORT FOR 1958

The complete volume of the Annual Report of the Board of Regents for 1958 was received from the printer on December 8, 1959:

Annual Report of the Board of Regents of the Smithsonian Institution showing the operations, expenditures, and condition of the Institution for the year ended June 30, 1958. x+559 pp., 92 pls., 15 figs. (Publ. 4354.)

The general appendix contained the following papers (Publ. 4355–4374):

The sun's energy, by Farrington Daniels.

Sun, sea, and air, by Roger Revelle.

Rocketry, by Donald Cox and Michael Stoiko.

Fresh water for arid lands, by David S. Jenkins.

The abundance of the chemical elements, by Hans E. Suess.

Earthquakes and related sources of evidence on the earth's internal structure, by K. E. Bullen.

The Darwin-Wallace centenary, by Sir Gavin de Beer.

Does natural selection continue to operate in modern mankind? by Theodosius Dobzhansky and Gordon Allen.

The ecology of man, by Paul B. Sears.

The sea otter, by Karl W. Kenyon.

Screwworm eradication: concepts and research leading to the sterile-male method, by E. F. Knipling.

Narrative of the 1958 Smithsonian-Bredin Caribbean Expedition, by Waldo L. Schmitt.

Tools makyth man, by Kenneth Oakley.

The backwash of the frontier: The impact of the Indian on American culture, by A. Irving Hallowell.

The restored Shanidar I skull, by T. D. Stewart.

Acculturation in the Guajira, by Raymond E. Crist.

The Braced-up Cliff at Pueblo Bonito, by Neil M. Judd.

A century of American Indian exhibits in the Smithsonian Institution, by John C. Ewers.

The childhood pattern of genius, by Harold G. McCurdy.

The New England porringer: An index of custom, by Anthony N. B. Garvan.

REPORT FOR 1959

The Report of the Secretary, which will form part of the Annual Report of the Board of Regents to Congress, was issued January 15, 1960:

Report of the Secretary and financial report of the Executive Committee of the Board of Regents for the year ended June 30, 1959. x + 243 pp., 10 pls., 1 map. (Publ. 4389.)

SPECIAL PUBLICATIONS

The Smithsonian Institution. 1959 revised edition. 49 pp., illustr. (Publ. 4145.) [November] 1959.

REPRINTS

Smithsonian Logarithmic Tables, prepared by George Wellington Spenceley, Reba Murray Spenceley, and Eugene Rhodes Epperson. First reprint. Smithsonian Miscellaneous Collections, vol. 118, Publ. 4054. xii + 402 pp. [January] 1960. ($4.50.)

Smithsonian Physical Tables, prepared by William Elmer Forsythe. Ninth revised edition, second reprint. Smithsonian Miscellaneous Collections, vol. 120, Publ. 4169. vi + 827 pp., 36 fig. [November] 1959. ($10.00.)

Small arms and ammunition in the United States Service, 1776–1865, by Berkeley R. Lewis. First reprint. Smithsonian Miscellaneous Collections, vol. 129, Publ. 4254. viii + 338 pp., 52 pls., 28 figs. [May] 1960. ($8.00.)

PUBLICATIONS OF THE UNITED STATES NATIONAL MUSEUM

The editorial work of the National Museum continued during the year under the immediate direction of John S. Lea, assistant chief of the division. The following publications were issued:

REPORT

The United States National Museum annual report for the year ended June 30, 1959. vi + 178 pp., illustr. Jan. 15, 1960.

BULLETINS

202, vol. 2. Fishes of the Marshall and Marianas Islands, by Leonard P. Schultz and collaborators: Wilbert M. Chapman, Ernest A. Lachner, and Loren P. Woods. ix + 438 pp., pls. 75–123, figs. 91–132. May 11, 1960.

216, part 2. Ichneumon-flies of America north of Mexico: 2. Subfamilies Ephialtinae, Xoridinae, and Acaenitinae, by Henry and Marjorie Townes and collaborators: G. Stuart Walley, Luella Walkley, Dale Habeck, and George Townes. vii + 676 pp., 378 figs. June 24, 1960.

217. Birds of Anaktuvuk Pass, Kobuk, and Old Crow, by Laurence Irving. viii + 409 pp., 13 pls., 36 figs. Mar. 22, 1960.

218. Contributions from the Museum of History and Technology, Papers 1–11. v + 201 pp., 124 figs. Nov. 16, 1959.

No. 1. The Scholfield wool-carding machines, by Grace L. Rogers.
No. 2. John Deere's steel plow, by Edward C. Kendall.
No. 3. The beginnings of cheap steel, by Philip W. Bishop.
No. 4. The Auburndale Watch Company, by Edwin A. Battison.
No. 5. Development of the phonograph at Alexander Graham Bell's Volta Laboratory, by Leslie J. Newville.
No. 6. On the origin of clockwork, perpetual motion devices, and the compass, by Derek J. de Solla Price.
No. 7. Mine pumping in Agricola's time and later, by Robert P. Multhauf.
No. 8. The natural philosophy of William Gilbert and his predecessors, by W. James King.
No. 9. Conestoga wagons in Braddock's campaign, 1755, by Don H. Berkebile.
No. 10. Old English patent medicines in America, by George B. Griffenhagen and James Harvey Young.
No. 11. Why Bewick succeeded: A note in the history of wood engraving, by Jacob Kainen.

CONTRIBUTIONS FROM THE U.S. NATIONAL HERBARIUM

Volume 35

Part 1. Supplemental notes on the American species of Passifloraceae with descriptions of new species, by Ellsworth P. Killip. ii + 23 pp., 11 pls. May 10, 1960.

Volume 36

Part 1. A revision of the South American species of *Parmelia* determined by Lynge, by Mason E. Hale, Jr. 41 pp., 5 pls. May 18, 1960.

PROCEEDINGS

Volume 108

No. 3408. A revision of the butterfly genera *Theochila* and *Tatochila* (Lepidoptera: Pieridae), by José Herrera and William D. Field. Pp. 467–514, 93 figs. July 24, 1959.

Title page, table of contents, and index. Pp. i–v, 599–627. May 11, 1960.

Volume 109

No. 3412. Marine Mollusca of Point Barrow, Alaska, by Nettie MacGinitie. Pp. 59–208, 27 pls. Sept. 18, 1959.

No. 3415. Biting midges of the genus *Culicoides* from Panama (Diptera: Heleidae), by Willis W. Wirth and Franklin S. Blanton. Pp. 237–482, 91 figs. July 29, 1959.

Title page, table of contents, and index. Pp. i–iii, 483–498. May 18, 1960.

Volume 110

No. 3416. Grasshoppers of the Mexicanus group, genus *Melanoplus* (Orthoptera: Acrididae), by Ashley B. Gurney and A. R. Brooks. Pp. 1–93, 5 pls., 18 figs. July 9, 1959.

No. 3417. A revision of American bats of the genera *Euderma* and *Plecotus*, by Charles O. Handley, Jr. Pp. 95–246, 27 figs. Sept. 3, 1959.

No. 3418. A revision of the Apion subgenus *Trichapion* Wagner in the New World (Coleoptera: Curculionidae), by David G. Kissinger. Pp. 247–389, 19 figs. Oct. 23, 1959.

No. 3419. A description and classification of the final instar larvae of the Ichneumonidae (Insecta, Hymenoptera), by J. R. T. Short. Pp. 391–511, 64 figs. Oct. 23, 1959.

No. 3420. Mammals of northern Colombia, preliminary report No. 8: Arboreal rice rats, a systematic revision of the subgenus *Oecomys*, genus *Oryzomys*, by Philip Hershkovitz. Pp. 513–568, 12 pls., 6 figs. Feb. 24, 1960.

No. 3421. The rodent-infesting Anoplura (sucking lice) of Thailand, with remarks on some related species, by Phyllis T. Johnson. Pp. 569–598, 75 figs. Sept. 10, 1959.

Volume 111

No. 3422. A new American genus of cryptopid centipedes, with an annotated key to the scolopendromorph genera from America north of Mexico, by Ralph E. Crabill, Jr. Pp. 1–15, 16 figs. Jan. 27, 1960.

No. 3423. A fourth contribution to the knowledge of Neotropical platyrhacid millipeds (Diplopoda: Polydesmida), by Richard L. Hoffman. Pp. 17–31, 1 fig. Feb. 2, 1960.

No. 3424. Millipeds from Dominica, British West Indies, by Richard L. Hoffman. Pp. 33–41, 2 figs. Jan. 22, 1960.

No. 3425. Notes on larvae of nine genera of Aphodiinae in the United States (Coleoptera: Scarabaeidae), by Manohar Lal Jerath. Pp. 43–94, 89 figs. Feb. 2, 1960.

No. 3426. A synopsis of the Atopetholidae, a family of spiroboloid millipeds, by Richard L. Hoffman and Barbara S. Orcutt. Pp. 95–165, 12 figs. Mar. 14, 1960.

No. 3427. Centipedes of the Smithsonian-Bredin expeditions to the West Indies, by Richard B. Selander and John K. Bouseman. Pp. 197–226, 12 figs. Mar. 14, 1960.

Volume 112

No. 3432. Flies of the family Conopidae from eastern Asia, by Sidney Camras. Pp. 107–131. June 24, 1960.

No. 3433. Fireflies of the genus *Pyractonema* (Coleoptera: Lampyridae), by Frank A. McDermott. Pp. 133–157, 9 figs. June 24, 1960.

No. 3434. North and South American copepods of the genus *Hemicyclops* (Cyclopoida: Clausidiidae), by Richard U. Gooding. Pp. 159–195, 10 figs. June 17, 1960.

No. 3435. Chironomid midges of California. I. Chironominae, exclusive of Tantarsini (=Calopsectrini), by James E. Sublette. Pp. 197–226, 2 figs. June 28, 1960.

PUBLICATIONS OF THE BUREAU OF AMERICAN ETHNOLOGY

The editorial work of the Bureau continued under the immediate direction of Mrs. Eloise B. Edelen. The following publications were isued:

ANNUAL REPORT

Seventy-sixth Annual Report of the Bureau of American Ethnology, 1958–1959. ii+41 pp., 4 pls. 1960.

BULLETINS

Bulletin 143, Vol. 7. Index to the Handbook of South American Indians. vi+286 pp. 1959.

Bulletin 172. The story of a Tlingit community: A problem in the relationship between archeological, ethnological, and historical methods, by Frederica de Laguna. x+254 pp., 11 pls., 18 figs. 1960.

Bulletin 173. Anthropological Papers Nos. 57–62. iii+498 pp., 61 pls., 37 figs., 2 maps. 1960.

  No. 57. Preceramic and ceramic cultural patterns in northwest Virginia, by C. G. Holland.

  No. 58. An introduction to Plains Apache archeology—the Dismal River Aspect, by James H. Gunnerson.

  No. 59. The use of the atlatl on Lake Patzcuaro, Michoacán, by M. W. Stirling.

  No. 60. A Caroline Islands script, by Saul H. Riesenberg and Shigeru Kaneshiro.

  No. 61. Dakota winter counts as a source of Plains history, by James H. Howard.

  No. 62. Stone tipi rings in north-central Montana and the adjacent portion of Alberta, Canada: Their historical, ethnological, and archeological aspects, by Thomas F. Kehoe.

Bulletin 174. An introduction to Kansas archeology, by Waldo R. Wedel. With description of the skeletal remains from Doniphan and Scott Counties, Kansas, by T. D. Stewart. xvii+723 pp., 97 pls., 109 figs. 1959.

Bulletin 177. Archeological investigations in British Guiana, by Clifford Evans and Betty J. Meggers. xxi+418 pp., 68 pls., 127 figs. 1960.

PUBLICATIONS OF THE ASTROPHYSICAL OBSERVATORY

The editorial work of the Smithsonian Astrophysical Observatory continued under the immediate direction of Ernest E. Biebighauser. The year's publications are as follows:

Volume 3

No. 6. A fluid-dynamic mechanism of meteorite pitting, by David T. Williams. Pp. 47–67, 14 pls., 9 figs. 1959.

No. 7. Periodic orbits of a planetoid passing close to two gravitating masses, by Robert R. Newton. Pp. 69–78, 5 figs. 1959.

No. 8. Meteor trains, by Robert F. Hughes. Pp. 79–94, 13 figs. 1959.

No. 9. Geodetic uses of artificial satellites, by George Veis. Pp. i–iv, 95–161, 23 figs. 1960.

Volume 4

No. 1. Catalog of hourly meteor rates, by Charles P. Olivier. Pp. 1–14. 1960.

Volume 5

No. 1. The meteoric head echo, by Allen F. Cook and Gerald Hawkins. Pp. 1–7, 2 figs. 1960.

No. 2. The upper atmosphere and satellite drag, by R. J. Stirton. Pp. 9–15, 5 figs. 1960.

No. 3. On the structure of the sunspot zone, by Barbara Bell. Pp. 17–28, 15 figs. 1960.

PUBLICATIONS OF THE NATIONAL COLLECTION OF FINE ARTS

The art of Seth Eastman, by John Francis McDermott. Smithsonian Traveling Exhibition Service Catalog. 34 pp., 9 plate figs. 1959.

Smithsonian Institution Traveling Exhibitions, 1960–1961 catalog. 40 pp. 1960.

PUBLICATIONS OF THE FREER GALLERY OF ART

Calligraphers and painters: A treatise by Qadi Ahmad, son of Mir-Munshi (circa A.H. 1015/A.D. 1606). Translated from the Persian by V. Minorsky. With an introduction by B. N. Zakhoder, translated from the Russian by T. Minorsky. Freer Gallery of Art Occ. Pap., vol. 3, No. 2. x+225 pp., 8 pls. (Publ. 4339.) 1959. ($4.00.)

Hokusai paintings and drawings in the Freer Gallery of Art, by Harold P. Stern. Catalog. 40 pp., 36 pls. (Publ. 4419). 1960. ($1.00.)

Medieval Near Eastern ceramics in the Freer Gallery of Art, by Richard Ettinghausen. Catalog. 40 pp., 40 plate figs. (Publ. 4420.) 1960. ($1.00.)

Ars Orientalis, vol. 3. vi+263 pp., 132 pls., 28 figs. (Publ. 4381.) 1959. ($20.00.)

REPORTS OF THE AMERICAN HISTORICAL ASSOCIATION

The annual reports of the American Historical Association are transmitted by the Association to the Secretary of the Smithsonian Institution and are by him communicated to Congress, as provided in the act of incorporation of the Association. The following reports were issued during the year:

Annual Report of the American Historical Association, 1955. Vol. 2, Writings on American History, 1953. 1960.

Annual Report of the American Historical Association, 1958. Vol. 1, Proceedings. 1959.

REPORT OF THE NATIONAL SOCIETY, DAUGHTERS OF THE AMERICAN REVOLUTION

In accordance with law, the manuscripts of the sixty-first and sixty-second annual reports of the National Society, Daughters of the American Revolution, were transmitted to Congress on February 1 and March 7, 1960, respectively.

OTHER ACTIVITIES

During the year the Smithsonian Institution was elected to affiliate membership in the Association of American University Presses. Late in May, the chief of the Editorial and Publications Division attended the annual meeting of the Association in Pittsburgh, representing the Institution and formally accepting the membership.

A project consummated during the year was the editing of "Smithsonian Treasury of Science," an anthology of 50 articles that have appeared over the years in the General Appendices of the Report of the Board of Regents of the Smithsonian. These appendices, which have appeared in the Report without a break for well over a century, have contained many outstanding and important articles in science and technology, most of them by eminent scientists and writers. Written primarily for the general public, rather than for specialized readers, they have formed a significant part of the Institution's program for the diffusion of knowledge. It was felt that bringing the best of the articles together for a wider readership would be well worthwhile from many standpoints. The new work, edited by W. P. True, former chief of the division, will appear in a 3-volume set in the fall of 1960, published by Simon & Schuster, Inc., of New York, in cooperation with the Smithsonian.

The chief of the division continued to represent the Smithsonian Institution on the board of directors of the Greater Washington Educational Television Association, Inc., of which the Institution is a member.

Respectfully submitted.

PAUL H. OEHSER,
Chief, Editorial and Publications Division.

DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.

Other Activities

LECTURES

In 1931 the Institution received a bequest from James Arthur, of New York City, a part of the income from which was to be used to endow an annual lecture on some aspect of the sun. The 26th Arthur lecture was delivered in the auditorium of the Natural History Building on the evening of October 15, 1959, by Dr. Alan Maxwell, research associate of the Radio Astronomy Station of Harvard College Observatory, Fort Davis, Tex., on the subject "Radio Waves from the Sun." This lecture, the first in the series that has been concerned with radio astronomy, was published in full in the general appendix of the Annual Report of the Board of Regents of the Smithsonian Institution for 1959.

Dr. George E. Mylonas, professor and chairman of the Department of Art and Archaeology of Washington University, St. Louis, Mo., delivered a lecture on "Eleusis, Its Sanctuary and Cemetery" in the auditorium of the Natural History Building on the evening of February 25, 1960. This was sponsored jointly by the Smithsonian and the Archaeological Institute of America.

Several lectures were also sponsored by the Freer Gallery of Art and the National Gallery of Art. These are listed in the reports of these bureaus.

Many other lectures on technical subjects were given at the Smithsonian during the year.

BIO-SCIENCES INFORMATION EXCHANGE

The Bio-Sciences Information Exchange, an agency operated within the Smithsonian Institution but financed by other Government agencies, is a clearing house for research in the life sciences.

Abstracts of on-going research are registered by investigators engaged in biological, medical, and psychological research and in limited aspects of research in the social sciences. Through an extensive system of subject indexing, these abstracts are provided upon request and without charge to researchers in research institutions. Through this simple mechanism, the Exchange maintains a communication system which precedes publication and prevents unknowing duplication. For granting agencies and properly constituted committees it prepares extensive surveys of research in broad areas.

The efficiency of the Bio-Sciences Information Exchange is greatly aided by the functional arrangement of its new offices and its electronic equipment. A Burroughs 205 computer was installed in October and considerable progress has been made toward conversion to operation on magnetic tape.

The volume of information in the Bio-Sciences Information Exchange continues to grow; approximately 30,000 current research studies are presently registered. The services of the Exchange are used increasingly by the scientific public as well as by granting agencies. The National Aeronautics and Space Administration joined the other Federal agencies supporting the Exchange this year.

One new professional, Willis Foster, M.D., joined the staff in July.

Conversations among Federal agencies are in progress concerning broadening the scope of the Exchange to include the physical as well as the biological sciences.

SMITHSONIAN MUSEUM SERVICE

The Smithsonian Museum Service, through appropriate educational media, interprets to museum visitors and to the general public, the objects, specimens, and exhibits of the several Smithsonian museums and develops educational programs for interpreting the work of the Institution in the fields of science, natural history, art, and history. The activity of the Museum Service includes the administration of Smithsonian cooperation with the volunteer docents of the Junior League of Washington, D.C. A more complete report of this activity is carried in the Report of the United States National Museum.

The Museum Service also provided assistance to professional and subprofessional individuals and groups visiting the museums of the Institution. Arrangements were made through the Museum Service for Smithsonian participation in the Workshop on the Use of Community Resources sponsored by the University of Maryland. Through the facilities of this workshop, a 5-day program outlining the history of the Institution and the work of the various Smithsonian museum and research bureaus was presented to 39 graduate students from the University of Maryland. Assistance in the form of lectures, answers to inquiries, and special tours of certain museum areas was also rendered to other college and university groups visiting the Institution and to individuals from the United States and abroad, visiting, or planning to visit the Smithsonian in a professional capacity.

The Museum Service took the first step in a long-range project to orient visitors to the various museums and exhibits of the Institution, through the installation and operation of an electronically controlled, automatic slide lecture device in the Great Hall of the Smithsonian Building.

Arrangements for various Smithsonian public functions and events, including lectures, films, and the opening of new halls and exhibits were made by the Museum Service. More complete information about these activities will be found under appropriate headings elsewhere in the Annual Report of the Secretary of the Smithsonian Institution. Mailing lists for invitations to these functions were enlarged and maintained, and the Smithsonian *Calendar of Events*, a monthly listing of special events of the Institution was prepared and distributed.

Report of the Executive Committee of the Board of Regents of the Smithsonian Institution

For the Year Ended June 30, 1960

To the Board of Regents of the Smithsonian Institution:

Your executive committee respectfully submits the following report in relation to the funds of the Smithsonian Institution, together with a statement of the appropriations by Congress for the Government bureaus in the administrative charge of the Institution.

SMITHSONIAN INSTITUTION

PARENT FUND

The original bequest of James Smithson was £104,960 8s 6d—$508,318.46. Refunds of money expended in prosecution of the claim, freight, insurance, and other incidental expenses, together with payment into the fund of the sum of £5,015, which had been withheld during the lifetime of Madame de la Batut, brought the fund to the amount of $550,000.

The gift of James Smithson was "lent to the United States Treasury, at 6 per centum per annum interest" (20 USC. 54) and by the Act of March 12, 1894 (20 USC. 55) the Secretary of the Treasury was "authorized to receive into the Treasury, on the same terms as the original bequest of James Smithson, such sums as the Regents may, from time to time see fit to deposit, not exceeding, with the original bequest the sum of $1,000,000."

The maximum of $1,000,000 which the Smithsonian Institution was authorized to deposit in the Treasury of the United States was reached on January 11, 1917, by the deposit of $2,000.

Under the above authority the amounts shown below are deposited in the United States Treasury and draw 6 percent interest:

	Unrestricted funds	*Income 1960*
James Smithson	$727, 640	$43, 658. 40
Avery	14, 000	840. 00
Habel	500	30. 00
Hamilton	2, 500	150. 00
Hodgkins (general)	116, 000	6, 960. 00
Poore	26, 670	1, 600. 20
Rhees	590	35. 40
Sanford	1, 100	66. 00
Total	889, 000	53, 340. 00
	Restricted funds	
Hodgkins (specific)	100, 000	6, 000. 00
Reid	11, 000	660. 00
Total	111, 000	6, 660. 00
Grand total	$1, 000, 000	$60, 000. 00

In addition to the $1,000,000 deposited in the Treasury of the United States there has been accumulated from income and bequests the sum of $3,716,789.35 which has been invested. Of this sum, $3,607,281.51 is carried on the books of the Institution as the Consolidated Fund, a policy approved by the Regents at their meeting on December 14, 1916. The balance is made up of several small funds.

CONSOLIDATED FUND

(Income for the unrestricted use of the Institution)

Fund	Investment 1960	Income 1960
Abbott, W. L., Special	$20, 726. 76	$1, 107. 19
*Avery, Robert S. and Lydia	54, 951. 79	2, 936. 06
Gifts, royalties, gain on sale of securities	384, 126. 43	20, 523. 76
Hachenberg, George P. and Caroline	5, 595. 10	298. 96
*Hamilton, James	561. 59	30. 01
Hart, Gustavus E	677. 62	36. 18
Henry, Caroline	1, 682. 55	89. 92
Henry, Joseph and Harriet A	68, 197. 81	3, 643. 79
*Hodgkins, Thomas G. (general)	42, 143. 05	2, 251. 68
Morrow, Dwight W	107, 580. 49	5, 747. 97
Olmsted, Helen A	1, 115. 36	59. 53
*Poore, Lucy T. and George W	226, 424. 24	12, 096. 78
Porter, Henry Kirke	398, 433. 63	21, 288. 21
*Rhees, William Jones	658. 20	35. 15
*Sanford, George H	1, 238. 44	66. 19
*Smithson, James	1, 698. 42	90. 73
Witherspoon, Thomas A	179, 535. 92	9, 591. 53
Total	1, 495, 347. 40	79, 893. 64

*In addition to funds deposited in the United States Treasury.

CONSOLIDATED FUND

(Income restricted to specific use)

Fund	Investment 1960	Income 1960
Abbott, William L., for investigations in biology	$145, 242. 68	$7, 701. 61
Arthur, James, for investigations and study of the sun and annual lecture on same	55, 639. 21	2, 972. 79
Bacon, Virginia Purdy, for traveling scholarship to investigate fauna of countries other than the United States	69, 700. 74	3, 724. 07
Baird, Lucy H., for creating a memorial to Secretary Baird	33, 496. 00	1, 789. 66
Barney, Alice Pike, for collection of paintings and pastels and for encouragement of American artistic endeavor	39, 902. 20	2, 131. 96
Barstow, Frederick D., for purchase of animals for National Zoological Park	1, 390. 87	74. 32
Canfield Collection, for increase and care of the Canfield collection of minerals	53, 209. 73	2, 843. 00
Casey, Thomas L., for maintenance of the Casey collection and promotion of researches relating to Coleoptera	17, 438. 11	931. 72
Chamberlain, Francis Lea, for increase and promotion of Isaac Lea collection of gems and mollusks	39, 177. 19	2, 093. 23
Dykes, Charles, for support in financial research	59, 902. 53	3, 200. 25
Eickemeyer, Florence Brevoort, for preservation and exhibition of the photographic collection of Rudolph Eickemeyer, Jr	15, 121. 68	807. 94
Hanson, Martin Gustav and Caroline Runice, for some scientific work of the Institution, preferably in chemistry or medicine	12, 367. 69	660. 81
Hillyer, Virgil, for increase and care of Virgil Hillyer collection of lighting objects	9, 143. 28	488. 50
Hitchcock, Albert S., for care of the Hitchcock Agrostological Library	2, 195. 26	117. 27
Hrdlička, Aleš and Marie, to further researches in physical anthropology and publication in connection therewith	63, 291. 13	3, 210. 11
Hughes, Bruce, to found Hughes alcove	26, 629. 65	1, 422. 82
Loeb, Morris, for furtherance of knowledge in the exact sciences	121, 247. 99	6, 477. 24
Long, Annette and Edith C., for upkeep and preservation of Long collection of embroideries, laces, and textiles	755. 39	40. 35
Maxwell, Mary E., for care and exhibition of Maxwell collection	27, 287. 52	1, 456. 98
Myer, Catherine Walden, for purchase of first-class works of art for use and benefit of the National Collection of Fine Arts	28, 101. 09	1, 501. 42
Nelson, Edward W., for support of biological studies	30, 938. 64	1, 653. 05

CONSOLIDATED FUND—Continued

Fund	Investment 1960	Income 1960
Noyes, Frank B., for use in connection with the collection of dolls placed in the U.S. National Museum through the interest of Mr. and Mrs. Noyes	$1, 336. 59	$71. 39
Pell, Cornelia Livingston, for maintenance of Alfred Duane Pell collection	10, 312. 28	550. 96
Petrocelli, Joseph, for the care of the Petrocelli collection of photographic prints and for the enlargement and development of the section of photography of the U.S. National Museum	10, 313. 21	551. 01
Rathbun, Richard, for use of division of U.S. National Museum containing Crustacea	14, 796. 89	790. 61
Reid, Addison T.,[1] for founding chair in biology, in memory of Asher Tunis	24, 745. 63	1, 081. 72
Roebling Collection, for care, improvement, and increase of Roebling Collection of minerals	167, 902. 74	8, 969. 98
Roebling Solar Research	32, 072. 20	1, 713. 61
Rollins, Miriam and William, for investigations in physics and chemistry	188, 051. 15	9, 785. 13
Smithsonian employees' retirement	33, 221. 51	1, 807. 54
Springer, Frank, for care and increase of the Springer collection and library	24, 948. 37	1, 331. 96
Strong, Julia D., for benefit of the National Collection of Fine Arts	13, 909. 98	743. 21
Walcott, Charles D. and Mary Vaux, for development of geological and paleontological studies and publishing results of same	667, 140. 38	35, 503. 44
Walcott, Mary Vaux, for publications in botany	80, 530. 58	4, 302. 72
Younger, Helen Walcott, held in trust	97, 112. 27	5, 188. 04
Zerbee, Frances Brinckle, for endowment of aquaria	1, 319. 65	70. 52
Total	2, 219, 892. 01	117, 760. 94

[1] In addition to funds deposited in the United States Treasury.

FREER GALLERY OF ART FUND

Early in 1906, by deed of gift, Charles L. Freer, of Detroit, gave to the Institution his collection of Chinese and other Oriental objects of art, as well as paintings, etchings, and other works of art by Whistler, Thayer, Dewing, and other artists. Later he also gave funds for construction of a building to house the collection, and finally in his will, probated November 6, 1919, he provided stocks and securities to the estimated value of $1,958,591.42, as an endowment fund for the operation of the Gallery. The fund now amounts to $9,054,863.05.

SUMMARY OF ENDOWMENTS

Invested endowment for general purposes	$2, 384, 347. 40
Invested endowment for specific purposes other than Freer endowment	2, 332, 441. 95
Total invested endowment other than Freer	4, 716, 789. 35
Freer invested endowment for specific purposes	9, 054, 863. 05
Total invested endowment for all purposes	13, 771, 652. 40

CLASSIFICATION OF INVESTMENTS

Deposited in the U.S Treasury at 6 percent per annum, as authorized in the U.S. Revised Statutes, sec. 5591		1, 000, 000. 00
Investments other than Freer endowment (cost or market value at date acquired):		
Bonds	$1, 435, 639. 64	
Stocks	2, 267, 442. 96	
Real estate and mortgages	701. 00	
Uninvested capital	13, 005. 75	3, 716, 789. 35
Total investments other than Freer endowment		4, 716, 789. 35
Investments of Freer endowment (cost or market value at date acquired):		
Bonds	$5, 055, 066. 30	
Stocks	3, 971, 028. 11	
Uninvested capital	28, 768. 64	9, 054, 863. 05
Total investments		13, 771, 652. 40

ASSETS

Cash:			
United States Treasury current account	$1, 276, 049. 62		
In banks and on hand	511, 002. 19		
	1, 787, 051. 81		
Less uninvested endowment funds	41, 774. 39		
		$1, 745, 277. 42	
Travel and other advances		7, 785. 20	
Cash invested (U.S. Treasury notes)		1, 328, 878. 18	
			3, 081, 940. 80
Investments—at book value:			
Endowment funds:			
Freer Gallery of Art:			
Stocks and bonds	$9, 026, 094. 41		
Uninvested cash	28, 768. 64	9, 054, 863. 05	

ASSETS—Continued

Investments at book value other than Freer:			
Stocks and bonds (Consolidated Fund)	$3,603,299.33		
Uninvested cash	13,005,75		
Special deposit in U.S. Treasury at 6 percent interest	1,000,000.00		
Other stocks and bonds	99,783.27		
Real estate and mortgages	701.00		
		$4,716,789.35	
			$13,771,652.40
Total			16,853,593.20

UNEXPENDED FUNDS AND ENDOWMENTS

Unexpended funds:			
Income from Freer Gallery of Art endowment			$625,788.70
Income from other endowments:			
Restricted		$501,326.58	
General		623,034.11	
			1,124,360.69
Gifts and contributions			1,331,791.41
			3,081,940.80
Endowment funds:			
Freer Gallery of Art	$9,054,863.05		
Other:			
General	2,384,347.40		
Restricted	2,332,441.95		
			13,771,652.40
Total			16,853,593.20

CASH BALANCES, RECEIPTS, AND DISBURSEMENTS DURING FISCAL YEAR 1960 [1]

	Restricted funds		Unrestricted funds	Gifts and grants	Total
	General	Freer			
RECEIPTS:					
Income from investments:					
Freer fund		$438,820.08			$438,820.08
Consolidated fund	$105,188.51		$79,893.64		185,082.15
Loan to U.S. Treasury	6,660.00		53,340.00		60,000.00
Real estate and mortgages	222.31				222.31
Special funds—stocks and bonds	5,456.54		39,633.75		45,090.29
Total income from investments	117,527.36	438,820.08	172,867.39		729,214.83
Publications	1,848.27	12,972.38	97,468.31	$10,990.08	123,279.04
Research grant income			51,796.77		51,796.77
Special gifts and fees:					
Gifts and contributions	1,623.67		2,555.00	[2]4,157,748.15	4,161,926.82
Special service fees	1,470.45	575.75	12,502.91	179,257.57	193,806.68
Refund of advances (net)			(3,358.43)		(3,358.43)
Employees' withholdings (net)			30,290.11		30,290.11
Total special gifts and fees	3,094.12	575.75	41,989.59	4,337,005.72	4,382,665.18
Reinvestment (required by provision of donor)	8,754.83				8,754.83
Total income	131,224.58	452,368.21	364,122.06	4,347,995.80	5,295,710.65
Sales of securities:					
Endowment funds:					
Freer fund		381,387.86			381,387.86
Consolidated fund	96,026.43		68,149.37		164,175.80
Total sales of securities	96,026.43	381,387.86	68,149.37		545,563.66
Redemption of mortgages	5,055.00				5,055.00
Total receipts	232,306.01	833,756.07	432,271.43	4,347,995.80	5,846,329.31
DISBURSEMENTS:					
Administrative salaries		36,898.36	95,593.05		132,491.41
Other salaries	10,630.61	151,177.41			161,808.02
Total salaries	10,630.61	188,075.77	95,593.05		294,299.43
Purchases for collection	11,045.75	123,952.00			134,997.75
Research and explorations and related administrative expenses:					
Salaries [3]			23,449.43	1,739,730.72	1,763,189.15
Travel	9,691.21	5,800.93	3,320.88		18,813.02
Equipment and supply	1,328.01		1,963.03		3,291.04
Other [3]	3,192.66		7,293.50	2,760,531.82	2,771,017.98
Total research and exploration and related administrative expense	14,211.88	5,800.93	36,026.84	4,500,271.54	4,556,311.19

[1] This statement does not include Government appropriations under administrative charge of the Institution.

[2] Includes receipts for IGY program.

[3] Includes disbursements for IGY program.

CASH BALANCES, RECEIPTS, AND DISBURSEMENTS DURING FISCAL YEAR 1960 [1]—Continued

	Restricted funds		Unrestricted funds	Gifts and grants	Total
	General	Freer			
DISBURSEMENTS—Continued					
Publications	$10, 255. 19	$28, 168. 50	$65, 427. 50		$103, 851. 19
Buildings, equipment, and grounds:					
Buildings and installations		12, 680. 68	1, 038. 35		13, 719. 03
Court and grounds maintenance		447. 11			447. 11
Technical laboratory		838. 57			838. 57
Total buildings, equipment and grounds		13, 966. 36	1, 038. 35		15, 004. 71
Contractual services:					
Custodian and legal fees	7, 509. 76	11, 618. 29	4, 758. 68		23, 886. 73
Supplies and expenses:					
Meetings, special exhibits		13, 151. 94	5, 841. 10		18, 993. 04
Lectures	593. 00	1, 788. 26			2, 381. 26
Photographs and reproductions		5, 593. 27	445. 56		6, 038. 83
Library		3, 123. 06	1, 140. 01		4, 263. 07
Stationery and office supplies			160. 05		160. 05
Postage, telephone, and telegraph			881. 08		881. 08
Stamp machines			405. 50		405. 50
Total supplies and expenses	593. 00	23, 656. 53	8, 873. 30		33, 122. 83
Total expenses	54, 246. 19	395, 238. 38	211, 717. 72	$4, 500, 271. 54	5, 161, 473. 83
Purchases of securities:					
Endowment funds:					
Freer fund		354, 670. 74			354, 670. 74
Consolidated fund	102, 348. 14		72, 635. 86		174, 984. 00
Other stocks and bonds	10. 84				10. 84
Total endowment funds	102, 358. 98	354, 670. 74	72, 635. 86		529, 665. 58
Total disbursements	156, 605. 17	749, 909. 12	284, 353. 58	4, 500, 271. 54	5, 691, 139. 41
Excess receipts over disbursements	75, 700. 84	83, 846. 95	147, 917. 85	(152, 275. 74)	155, 189. 90
Cash balance June 30, 1959					1, 631, 861. 91
Cash balance June 30, 1960					1, 787, 051. 81

The practice of maintaining savings accounts in several of the Washington banks and trust companies has been continued during the past year, and interest on these deposits amounted to $6,304.73.

Deposits are made in banks for convenience in collection of checks, and later such funds are withdrawn and deposited in the United States Treasury. Disbursement of funds is made by check signed by the Secretary of the Institution and drawn on the United States Treasury.

The Institution gratefully acknowledges gifts and grants from the following:

American Institute of Biological Sciences, to defray travel of Dr. Ernest A. Lachner.

American Institute of Biological Sciences, to assist in publishing a manuscript on "The Biotic Associations of Cockroaches," by Drs. Louis M. Roth and Edwin R. Willis.

American Philosophical Society, to be used in connection with Dr. Wallace L. Chafe's Indian language studies.

American Philosophical Society, to assist in defraying expenses of Dr. William C. Sturtevant while attending the Sixth International Congress of Anthropological and Ethnological Sciences, held in Paris, France.

American Philosophical Society, for the study of Comparative Collections of Northern South American materials in European Museums by Drs. Clifford Evans and Betty J. Meggers.

American Philosophical Society, to defray expenses of Dr. Henry B. Collins while attending the International Anthropological Congress, Paris, France.

Mrs. Jessie W. Armstrong, to the Smithsonian Institution to establish fund to be known as the "Edwin James Armstrong Fund" for use of the Department of Invertebrate Paleontology.

Atomic Energy Commission, grant for support of research entitled "Systematic Zoological Research on the Marine Fauna of the Tropical Pacific Area."

Atomic Energy Commission, for support of research and study of the Biochemical Effects of Ionizing and Nonionizing Radiation on Plant Metabolism during development.

Mr. J. Bruce Bredin, additional gift for the Smithsonian-Bredin Expeditions Fund.

Columbia University, grant to defray expenses of Dr. T. Dale Stewart to Baghdad and return, in connection with his work for the Smithsonian Institution.

F. E. Compton Company, grant for support in Improvement of the National Air Museum Library.

Department of Air Force, for research entitled "Study of Atmospheric Entry and Impact of High Velocity Meteorites."

Department of Air Force, additional grant for support of research and planning in connection with manned and unmanned balloon flights.

Department of Air Force, additional grant for support of research entitled "The Accretion of Meteorite Material by the Earth."

Department of Air Force, additional grant in support of research entitled "Scintillation Data on Balloon-Borne Telescope."

Department of Army, Ordnance Corps, additional grant for research entitled "Procurement of Satellite Tracking and Orbit."

Department of Health, Education, and Welfare, for support of research entitled "Economic System of the Herrero."

Entomological Society of America, to assist in defraying the expenses of Dr. J. F. G. Clarke to Europe in connection with his work for the Smithsonian Institution.

General Dynamics Corporation for the Meteorite Fund.

Guggenheim Memorial Foundation, Fellowship grant for Dr. Ernest A. Lachner.

Mr. E. P. Henderson, gift for the Meteorite Fund.

International Business Machines, gift for the purchase of a collection of antique instruments.

Jersey Production Research Corporation, additional grant for support of research project on Echinoid Spines.

Mr. E. A. Link, gift for support of the Marine Biological Project.

Link Foundation, gift for support of special publications dealing with aviation and the Smithsonian Institution Collections.

Michigan Mineralogical Society, gift to defray travel expenses of Dr. George S. Switzer to attend the annual meeting of the Michigan Mineralogical Society.

National Aeronautics and Space Administration, grants for support of the Satellite Tracking Program; astronomical telescope studies.

National Aeronautics and Space Administration and the National Science Foundation, grant for the "Acquisition of the Beyer Tektite Collection."

National Aviation Club, grant for the purpose of purchasing the C. G. B. Stuart Aviation Book Collection.

National Geographic Society, grant to help defray expenses in connection with the underwater archeological expedition to the Port Royal, Jamaica, under the auspices of the National Geographic Society-Smithsonian Institution.

National Geographic Society, additional grant for the continuation of a joint study by the National Geographic Society and Smithsonian Institution on the hoatzin.

National Geographic Society, additional grant to cover the preparation of technical drawings of fishes for illustration in the report on the collection of fishes made during the Arnhem Land Expedition.

National Science Foundation, for support of research entitled "Early Tertiary Mammals of North America."

National Science Foundation, for the support of research entitled "A Monograph of the Lichen Genus Parmelia."

National Science Foundation, grant for the support of research entitled "Behavior Patterns of Certain Tropical American Carnivores."

National Science Foundation, additional grant for support of research entitled "Metabolic Aspects of the Digestion of Wax."

National Science Foundation, additional grant for support of research entitled "A Monograph of Fresh-Water Calanoid Copepoda."

National Science Foundation, grant to assist in defraying expenses of Dr. William C. Sturtevant while attending the Sixth International Congress of Anthropological and Ethnological Sciences held in Paris, France.

National Science Foundation, grant for support of research entitled "The Flora of Fiji"; for research entitled "Economic System of the Herrero."

National Science Foundation, grant for support of research entitled "Mammals of the Southeastern United States."

National Science Foundation, grant for partial support of publication for "Classification and Multiplicity of Growth Layers in the Branches of Trees" by Glock Studhalter and Agerter.

National Science Foundation, grant to assist in defraying expenses of travel of Dr. George S. Switzer to Zurich, Switzerland for the purpose of attending the meeting of the International Mineralogical Association.

National Science Foundation, additional grant for the support of research entitled "Morphology and Paleoecology of Permian Brachiopods."

National Science Foundation, additional grant for the support of research entitled "Comparative Analysis of Behavior in Tropical Birds."

National Science Foundation, additional grant for the support of research entitled "Taxonomy of the Bamboos."

National Science Foundation, additional grant for the support of research entitled "Monograph of the Cassiduloidea"; support of research entitled "Studies of World-Wide Fungus Order Ustilaginales."

National Science Foundation, additional grant for research entitled "A Taxonomic Study of the Phanerogams of Colombia.

National Science Foundation, grant for the support of research entitled "Systematics of Chilopoda and Diplopoda."

National Science Foundation, grant supporting research entitled "Revisionary Study of Blattoides."

New York Mineralogical Club, grant to defray expenses of Mr. Paul E. Desautels from Washington, D. C., to New York City and return.

Office of Naval Research, additional grants to perform aeronautical research studies; to perform psychological research studies.

Office of Naval Research, additional grant for study concerning the development of a proposal for an institute or laboratory of human performance standards.

Office of Naval Research, additional grant for support of research in connection with studies on the marine fauna of the South Pacific Ocean.

Office of Naval Research, additional grants to provide expert consultants to advise the Navy Advisory Committee.

Office of Naval Research, additional grant for support of research entitled "Information on Shark Distribution and the Distribution of Shark Attacks All Over the World."

Rochester Academy of Sciences, for the use of Mr. Paul E. Desautels in connection with his work for the Smithsonian Institution.

St. Petersburg Shell Club, grant to defray expenses of Dr. Harald Rehder to and from St. Petersburg, Florida.

School of Science of the Venezuela Central University, grant for the purpose of purchasing equipment to be used in conducting field work on mammals in Venezuela by Dr. Charles O. Handley, Jr.

Mrs. L. Corrin Strong, gift to the Smithsonian Institution Traveling Exhibition Service for the purpose of exhibiting "Norwegian Tapestries" at the Smithsonian Institution.

Mr. Ganson Taggart, bequest to the Smithsonian Institution.

Woods Hole Oceanographic Institution, grant to defray expenses of Dr. Richard Cifelli on an expedition to the West Indies.

For support of the Bio-Sciences Information Exchange:
  Atomic Energy Commission.
  Department of the Air Force.
  Department of the Army.
  Department of Defense.
  Department of the Navy.
  National Science Foundation.
  Public Health Service.
  Veterans Administration.

Included in the above list of gifts and contributions are reimbursable contracts.

The foregoing report relates only to the private funds of the Institution.

The following appropriations were made by Congress for the Government bureaus under the administrative charge of the Smithsonian Institution for the fiscal year 1960:

Salaries and expenses	$7, 718, 000. 00
National Zoological Park	1, 165, 200. 00

The appropriation made to the National Gallery of Art (which is a bureau of the Smithsonian Institution) was $1,834,000.00.

In addition, funds were transferred from other Government agencies for expenditure under the direction of the Smithsonian Institution as follows:

Working Funds, transferred from the National Park Service, Interior Department, for archeological investigations in river basins throughout the United States	$122, 055. 00

The Institution also administers a trust fund for partial support of the Canal Zone Biological Area, located on Barro Colorado Island in the Canal Zone.

AUDIT

The report of the audit of the Smithsonian Private Funds follows:

Washington, D.C., *September 26, 1960.*

The Board of Regents,
Smithsonian Institution, Washington 25, D.C.

We have examined the statement of private funds of Smithsonian Institution as of June 30, 1960 and the related statement of private funds cash receipts and disbursements for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Land, buildings, furniture, equipment, works of art, living and other specimens and certain sundry property are not included in the accounts of the Institution; likewise, the accompanying statements do not include the National Gallery of Art and other departments, bureaus and operations administered by the Institution under Federal appropriations. The accounts of the Institution are maintained on the basis of cash receipts and disbursements, with the result that the accompanying statements do not reflect income earned but not collected or expenses incurred but not paid.

In our opinion, subject to the matters referred to in the preceding paragraph, the accompanying statement of private funds present fairly the assets, unexpended funds and endowments of the private funds of Smithsonian Institution at June 30, 1960; further, the accompanying statement of private funds cash receipts and disbursements, which has been prepared on a basis consistent with that of the preceding year, presents fairly the cash transactions of the private funds for the year then ended.

Peat, Marwick, Mitchell & Co.

Respectfully submitted.

(S) Robert V. Fleming,
(S) Clarence Cannon,
(S) Caryl P. Haskins,
Executive Committee.

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